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CATCHING WILD HORSES. Page 13.

TALES WORTH TELLING;

OR

A TRAVELLER'S

ADVENTURES BY SEA AND LAND,

TOLD TO HIS YOUNG LISTENERS,

FREDERIC AND LUCY.

Illustrated with one hundred and thirty-three engravings.

BOSTON:
CROSBY & AINSWORTH.
NEW YORK: OLIVER S. FELT.
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PREFACE.

It is the humble purpose of this little work to convey to the rising generation a small collection of "facts more wonderful than fiction." These compositions are a condensed series of truths in travel, related in evening fireside conversation, connected by no chain but the queries of children and a mother's replies. They were thus related because the purchase of many books was inconvenient, and because, if practicable, their formidable exhibition would have frightened a fastidious little auditory; thus defeating the object in view. They were briefly rehearsed in colloquial familiar speech, as an incitement to juvenile curiosity, leaving future gratification and filling up of the picture to time and opportunity. The Editor's children were anxious for information and entertainment, and she endeavored to satisfy their wishes in a manner agreeable to themselves, but not in a totally frivolous mode. She tried to simplify and suit to their capacities a few interesting topics, brought to light by recent travellers or skilful and enterprising men, with a

modicum of amusing or playful recital. To a numerous young family these "brief chronicles" appeared to afford pleasure and profit, and perhaps at least created a relish for future reading and proficiency, one of the objects dearest to a mother's heart.

In the hope that what was beneficial to a solitary coterie of youthful inquisitors might be of similar use in families similarly situated, and at the kind solicitation of many esteemed friends, she presents this little work to the public, as an introduction or pioneer to more extensive observation and perusal of the records of useful knowledge.

A MOTHER.

Boston, 1852.

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FREDERIC AND LUCY:

OR

FOOD FOR YOUNG MINDS.

THE HAPPY FAMILY.

Mr. and Mrs. Johnson had three children, Frederic, Lucy, and William. Frederic and Lucy could read tolerably well when assisted by their kind parents. William was a very little fellow, and could only read little words ; but he liked much to listen, when his father and mother were explaining to his brother and sister what they could not understand, in the books they read, or the plants they saw. He took much pains to learn, and used every day to say he hoped soon to be able to read such great books as his father and mother read, that he might know as many useful and pleasant stories as they did.

Mr. and Mrs. Johnson had great pleasure in imparting to their children such information as was suited to their years ; because Frederic and Lucy took great care to remember what they were told ; and, when they saw any lions, tigers, or other uncommon

animals, or any curious plants, would endeavor to recollect all they had been told about them.

THE TEA PLANT.

One morning, when Mrs. Johnson was going to make tea for breakfast, she accidentally let the tea-canister slip from her hand, and a great quantity of tea was scattered upon the table-cloth. All the children were standing round the table, breakfasting on bread and milk; they eagerly offered to assist in gathering up the scattered tea, and returning it to the tea-canister;—while so doing, Lucy observed how very different tea in the canister appeared from the leaves which were spread out by the hot water in the tea-pot; and she requested that her mother would be so good as to inform her how the tea was made to look so dry;—'for I think, mother,' said she, 'you have told me that tea comes from a shrub; and, if it is the leaves of a shrub, how is it made to look so dry and twisted?'

'I will tell you, my dear,' replied her mother: 'the leaves of the tea-shrub are, when first gathered, (that is, picked off the shrub,) moistened by the vapor of boiling water, then put into large flat iron pans, and heated over a fire, until they become quite hot: they are then thrown out upon clean mats; and people, who stand ready for the purpose, roll the hot leaves

between the palms of their hands, until they become quite dry and curled, as you see them.'

'Mother,' said Frederic, 'does the tea-shrub grow in our country? I never saw one in our garden.'

'No, my dear, tea does not grow here: it grows in China and Japan, countries very distant from ours, and it is brought to us in ships. The gathering of tea leaves forms a great part of the employment of the poor people of those countries; for the leaves are taken from the shrubs four times in the year; and these leaves must not be hastily pulled from the tree, but plucked off one by one, with much care. Children learn to do this; and, had you been born in China or Japan, instead of the United States, you, probably, would have been little tea-pickers.'

The children smiled at this idea, and little William asked what kind of a leaf a tea-leaf was.

'When the leaves are allowed to grow a long time, William, they very much resemble the leaves of a cherry-tree, and are called black or bohea tea; but when they are pulled young, you can see their shape by a whole leaf taken from the tea-pot, which is called old hyson, one of the kinds of green tea, although hyson-skin is also called black or bohea, being the broken or poorer part of the hyson.'

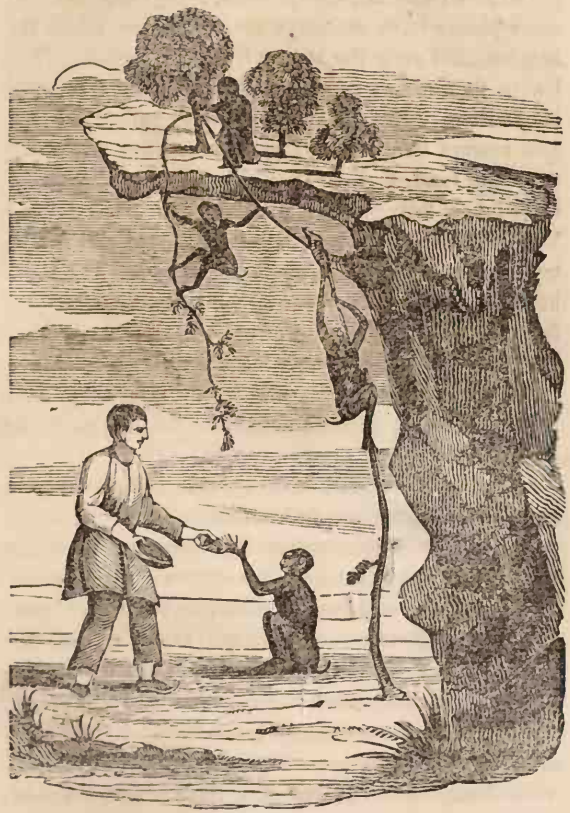
'Is a tea-leaf like a cherry-leaf?' asked William.

'The tea-plant is an evergreen shrub, and grows to a height varying between three and six feet, and

the flower, a drawing of which I will show you, is shaped like the wild rose in our pasture.'

'The seeds are sown in holes drilled in the ground at equal distances in regular rows. Whilst growing, the plants are regularly watered. Among other stories relative to the tea-tree it is asserted that some of the finest specimens grow wild on the precipitous sides of rocky mountains, where it is too difficult for human beings to gather them; and that the Chinese, in order to gather the tea, pelt a race of monkeys, which inhabit these mountains, with stones, provoking them to return the compliment with a shower of tea-branches. China is a great and populous

empire, and the choicest tea grows in particular provinces, and in some of these spots the emperor



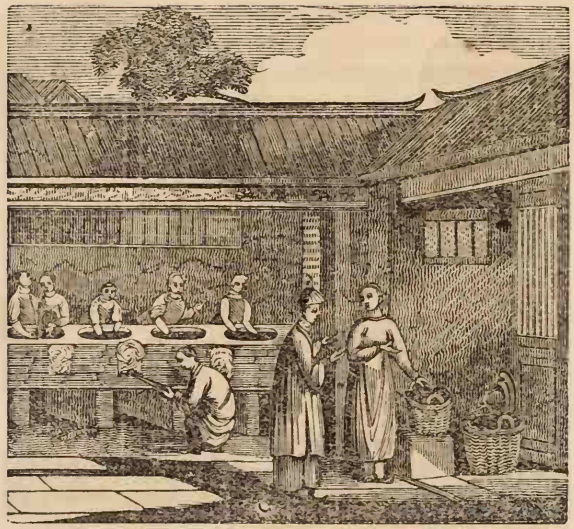
and nobility cultivate favorite species at great expense, care, and cleanliness, for their own use. Hence the names Imperial, Gunpowder, Ningyong, &c. In some places tame monkeys are trained to climb the heights, and strip the leaves from the bushes. The leaves then either roll down the rocks, or the wind blows them down, and the owners gather the tea, and reward the monkeys with something of which they are fond, and treat them with kindness for their labor, fatigue, and mischances. This is one way in which mankind turn the instinct and industry of animals to their own advantage. The monkeys sometimes climb the rocks by means of ropes, fastened at the summit of precipices, and sometimes mount these without such secure footing, in which last case, notwithstanding their activity, they once in a while meet with an accidental tumble, as in the monkey picture at the head of page 17.'

'Mother,' said William, 'are the hills so steep in such an old country as China ?'

'Hills are sometimes levelled, my dear, but rocky precipices and mountains usually 'endure forever. Mr. Ellis, an English traveller, says, 'Our walk lay through a valley, where we saw, for the first time, a tea-plant. It is a beautiful shrub, resembling a myrtle, with a yellow flower extremely fragrant ; we also saw the ginger in small patches, covered with a frame-work to protect it from the birds. The view from the top of the mountain repaid the labor

of our ascent. The scene was in the true mountain style, rock above rock in endless and sublime variety. This wildness was beautifully contrasted by the cultivation of the valleys, speckled with white cottages.'

'But, mother, is every leaf of tea in all the chests at the tea-store,—marked all over with hieroglyphics, or what we children call pot-hooks and trammels, —are all these millions of millions of leaves rolled in the hand, to make them curl, as Lucy does her hair in pieces of old newspaper, or crimp with a pair of curling-tongs?' said little William.



'Some kinds of tea are only exposed under a shed to the sun's rays, and frequently turned. The process in this picture is probably only used in green teas. A drying-house, a section only of which is given in the cut, will contain from ten to twenty furnaces, on the top of each of which is a flat-bottomed, shallow iron pan; there is also a long, low table, covered with mats, on which the leaves are spread and rolled. When the pans are rightly heated, a few pounds of fresh and juicy leaves are spread on them, and the operative or workman stirs them rap-

idly with his bare hands, until the heat is too hot for the touch. At this moment he takes off the leaves with a kind of shovel like a fan, and pours them on the mats before other operatives, who, taking up a few leaves, roll them in the palms of their hands in one direction only, while other assistants with fans rapidly cool the leaves by fanning them. This heating, each time more moderately, is sometimes repeated two or three times, till the moisture is evaporated. It is afterwards sorted into several classes, packed in chests with the name of the district, grower, and inspector, and called, from a Chinese word, meaning *seal* or *measure*, CHOPS.'

'Mother, how far distant, is China ?' said Lucy.

'Perhaps our ships have to sail 10,000 miles, in a round-about way, to arrive at Canton in China.'

'What a distance to send for breakfast, mother !' But what is meant by the tea-act ?' said Frederic. 'Do tell us about this, mother.'

'You are little Bostonians, and ought to know what was done by your fathers and grandfathers.

'England, you know, was the mother country of the United States, and, when she undertook to enforce 'taxation without representation,' the then colonies separated from Great-Britain. The tea-act, stamp-act, and finally the Boston Port-bill, shutting up the harbor, and stopping all navigation and commerce, were the most obnoxious of these oppressions, and, rather than receive tea and other articles

under such hard terms, they threw the tea overboard at Griffin's (now called Russia-wharf,) got rid forever of paying the tea and all other taxes, separated from the mother country, fought our way to liberty and freedom, and, under the administration of Washton, brought tea ourselves to Boston and other places.

'Town-meetings and other peaceable measures had been resorted to from the year 1769 to '73, and then the inhabitants of Boston and vicinity held a town meeting at Faneuil-hall, which was not large enough to hold them, and they adjourned to the Old South church, appointed Dr. Joseph Warren and seven others to wait upon Gov. Gage at Milton, petitioning him not to land three cargoes of tea. Upon his refusal, sixty of the assembly, disguised as Indians, marched from the church to Griffin's wharf, and made tea for the fishes of half the water in the dock. Two hundred and forty chests with one hundred half chests were staved and emptied over the sides of the vessels into the sea. The transaction was conducted without noise or disturbance, and no injury was done to any person or article except the tea, although these ships were almost under the guns of the fort and near the barracks of the English soldiery. The revolutionary war and the battles of Lexington and Bunker Hill soon followed, and independence was established. Good, however, has come out of this consummation, and both countries have been enriched, increased, mutually benefited, and ennobled by the division.

'I will now go on with my story, where I broke off. Monkeys, as I told you before, in climbing, sometimes fall from the crumbling rocks.

'Tea was not introduced into England till 1710, and, owing to its cost, not much used in America till fifty years later. It is probably to this period that we may refer the anecdote, if true, of the country lady, who receiving, as a present from a town acquaintance, a small quantity of tea, in total ignorance of its real use, looked upon it as some outlandish vegetable, boiled it till she thought it was tender, and then, throwing away the water, endeavored to eat the leaves.'

'But, mother,' said Lucy, 'I have seen you take

out a different kind of tea when you were going to have company.'

'Yes, my dear, that tea is finer-tasted, and more expensive, than what I use daily, and is called gunpowder. The younger the leaves, the finer or more pleasant the tea; but then, you know, as there must be a much smaller quantity of tea produced from selected leaves not arrived at their full size, so this tea is sold at a higher price. At seven years old, a tea-shrub yields nothing but poor, hard, low-prized leaves. Gunpowder and old hyson are the first and best pickings, or 'first chop,' in Chinese terms. The following picture is probably the method of gathering

bohea or black tea in pastures, and drying them under sheds, as a cheap or less expensive kind, or chop.'

'I once saw a China man in the street, mother,' said Frederic, 'dressed strangely.'

'The dress of the Chinese is almost as singular and curious as their productions, manners and customs. The men wear a bell-looking hat without rim, shaped nearly like a basin or dish-cover. Their black hair is very long and braided, and hangs down behind them, reaching more than half way to their feet, and sometimes with an addition which looks something like a whip-lash, ornamented with little pieces of colored riband. They wear wooden shoes, with the toes turned up, something like sleigh-runners, long stockings, short pantaloons, sack coats, a

long robe with wide sleeves like a loose gown, a sort of decorated apron, and flowing silk girdle; the robe is sometimes of rich figured stuff according to the

caste or rank of the wearer; and the rich button of coral, crystal, or gold, mounted in his funnel-shaped hat, shows his rank, from the emperor and mandarins down to the poor little fanner of tea-leaves, of the lowest caste of Chinese supposed degradation.'

'Do the ladies dress so strangely?' asked Lucy.

Female fashions are sometimes very hurtful to health in all nations. I will mention one Chinese fashion which tortures or lames young females of the higher castes, and is foolishly imitated by the middling classes, but it merely makes hobbling cripples of them, and does not otherwise greatly injure them. Some of the lowest classes, or castes, chiefly confined to the mountains, or distant provinces, have not adopted this unnatural fashion. You know, no doubt, that I refer to a Chinese lady's shoe, which is formed of silk and beautifully embroidered. The foot is confined

in infancy, except the great toe, and tortured in youth into this stunted unnatural shape. You, Lucy, lately saw a Chinese lady in Boston, wearing this little shoe, but this fashion jeopardizes not the life of its wearer, like our silly fashion of tight lacing. The old English fashion of peaked-toed boots was carried to such extravagant lengths that occasionally the incommoded wearer tied the toe end of his boot above his knee, and in battle cavaliers got rid of the nuisance by cutting off half a yard of it.

We have no excuse for our fashions, and the Chinese only a lame one for theirs. The females in China without small feet are held in contempt, and employed only as servants. Even if two sisters, otherwise equal in every respect of person or mind, if the one has been thus maimed, and the other's feet suffered to grow naturally, the latter sister is considered unworthy to associate with the rest of the family, a sort of banished Cinderella, who *cannot* put on a little glass slipper, and therefore doomed to perpetual obscurity, or the drudgery of the kitchen.'

'Do they live upon food like ours?' said Frederic, 'and do the boys dress and play as we do?'

'In many respects their modes and even their sports are at antipodes, or directly contrary to ours. For instance, the boys play shuttlecock with their feet instead of their hands; and, what is more strange, Frederic, they strike the bird or ball with the sole of the foot; at which they are very expert.

Even the pedlar, walking behind them, exhibits his wares, consisting of toys, dolls, scaramouches, and skipjacks, strung upon a long pole.

The wealthy sometimes treat their visiters with hundreds of rich courses at a single dinner, eating from

diminutive plates and cups. The Hong merchant, Mowqua, at Canton, lately invited an Englishman among his guests, and met him at the door along with his son, a white knob upon his cap, betokening the fifth rank of mandarins, and both their attires of the most rich and splendid kinds. Young Mowqua wore, over all his silk coats and vests, confined by a beautiful sash, a cloak of the costliest furs, the badge of nobility. Wealthy nobles and merchants live in splendor. And six long hours was the poor visiter kept eating, drinking, and smoking.

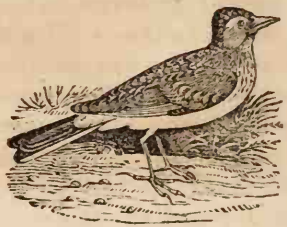
But the Chinese people eat almost everything that comes to hand. In the streets or squares, birds are daily exposed for sale, which we have excluded from our bills of fare, such as hawks, owls, eagles, and storks; to us nothing would appear more laughable than to see the Chinese arrive with a carrying-pole supporting two bird-cages, which, instead of birds, contain fat dogs and cats. The flesh of these last, when of the best age and quality are admitted upon tables of the nobles. Other Chinese marketers bring upon their tall carrying-poles many dozens of rats, nicely drawn and cleaned, suspended by means of a cross-piece through the hind legs. These rows of rats, tho' highly prized, are eaten only by the poor.

Mrs. Johnson now said she had letters to write, and desired the children to go into the garden. They obeyed her immediately.

THE LARK'S NEST.

When Mrs. Johnson had finished writing, she called her children to walk with her in the pastures. They were very glad ; for they all delighted in seeing wild flowers ; and, when little William was not of the party, (for he was too young to have long walks without being tired,) Frederic and Lucy always brought him a nosegay of wild pinks or roses.

The morning was beautiful, the sun shone bright, and the sprightly notes of the lark, as she ascended high in the air, increased the lively gaiety of the children. In the excess of their delight, they bounded over the meadows ; and sometimes they stopped to listen to the music of the lark, and admire the height of her flight.



While running across a large field, they suddenly stopped on observing a bird, which they supposed a lark, rise from the ground, and presently fly so high

as scarcely to be discerned. Frederic advised Lucy to tread very lightly, as it was probable the lark had a nest on the ground. He had seen a lark's nest,

but Lucy had not; and, when her brother Frederic told her that larks made their nests on the ground, she was greatly surprised, for she had al-

ways imagined that every bird made its nest in a tree or a hedge. She stepped softly, with her body almost double, so fearful was she of not finding the nest. Presently she saw another bird fly from the ground, just at her brother's foot, who at that moment cried out, 'I have found it, I have found it! one,—two,—three,—four birds!' Lucy crept forward, and then knelt down to the nest, and saw, as Frederic had counted, four pretty little birds, covered with yellow down, and stretching up their little gaping bills as though they expected food. Just at the time they were kneeling at the nest, their mother came up, and asked what excited their attention.

The children showed her the nest, and she joined in their admiration of it and its pretty inhabitants. Frederic proposed taking the nest home; 'and then,' said he, 'Lucy and I can take care of the larks, and then we shall hear their sweet singing every day—even, you know, mother, when it rains, so that we cannot go out.'

'But, my dear little boy,' replied his mother, 'you forget, that, while you are endeavoring to make the young birds happy, you would make the old ones very miserable. Even your kindness would be very much misplaced; for you would be doing the greatest injury to these little birds, by taking them from the care of their father and mother, who, no doubt, were the birds you saw rise from the ground, and who, most likely, are gone in search of food for their

young ones ; and think, Frederic, what they would suffer when they returned with their store of provisions, and found the nest they had taken so much pains to form, and their little ones, all gone ! Think what your father and I should feel, if, when we returned from a journey, we were to find you and your brother and sister taken away : and, in proportion, feel as much as we should do,—for God has given to all animals a strong affection towards their young.'

' Indeed, mother, I did not think it would have been a cruel action to take the larks, or I would not have offered to do so. I have often seen boys seeking birds' nests ; and I did not know it was wrong, although one of these boys I was told finally fell from a tree, where he was attacked by the old bird, and broke both his arms.'

' I believe you, my dear ; I know you would not intentionally be cruel."

' No indeed, mother, I would not be cruel,' said Frederic, the tears starting from his eyes.

The best birds are recklessly destroyed for game or sport, but all, except birds of prey, are of great use. Seven-eighths of their food in summer is insects; they feed their young almost wholly on them. That little bird you see on the hedge, called a hair-bird or sparrow, feeds her young 35 times an hour, which, at 14 hours a day, is 3500 insects destroyed in a week by a single bird. All other countries encourage their increase, whilst we persecute them.

As for those boys, said Mrs. Johnson, whom you saw robbing birds' nests, perhaps they are more to be pitied for their ignorance, than blamed for their cruelty; for probably nobody told them how cruel it is to rob birds of their young or their eggs. You see you were yourself just going to commit a cruel action from want of consideration. I am always grieved when I see children whose friends do not take pains to teach them humanity. But now, my dears, I tell you what we will do. Every fine morn-

ing we will walk to this field, and you shall bring crumbs of bread, and lay them by the nest. In time the little birds will learn to know you ; probably the parent birds will also. You can watch the growth of the young ones, and, when they are old enough to trust to their own strength, they will leave the nest, and then you may take it up and carry it home to examine how curiously and skilfully it is made ; and perhaps some of your father's friends, when they call upon us, may tell you something more.

Frederic and Lucy were delighted at this permission ; and Lucy said, she thought she had taken so much notice of both the young and old birds, that she believed she could draw a picture of them, when she got home. Her mother approved Lucy's intention of endeavoring to delineate the birds, saying, she was always pleased when her children tried to use the pencil for themselves, and were not, like some silly children, constantly teasing their friends to draw them pictures.

THE VISITER.

When dinner was over, and the children went into the dining-room, they found, with their parents, a gentleman whom they had never seen before. Little William hung down his head at the sight of a stranger, which made him look very foolish, and Lucy

was rather inclined to look bashful ; but when she saw her brother Frederic shaking hands with the gentleman and answering his questions properly like a child of sense, she followed his good example ; and, when the gentleman desired her to come to him, she went directly ; and when he desired to know if she could read, she spoke up and said, ' Yes, sir, I can read a little, but not very well.' He then talked a great deal more to her, because he saw she was not a silly child ; but, if she had gone into a corner, or a window, without speaking, and hung down her head, put her fingers in her mouth, nipped her frock, or any other foolish action awkward children are apt to do, the gentleman would not have taken any notice of her.

Little William soon forgot his diffidence, when he found his brother and sister so kindly treated ; he climbed up the gentleman's knee, and held up his mouth to kiss him. ' That is a clever fellow, and a kind one,' said the gentleman ; ' I perceive you and I shall be good friends. If I find you so, I can tell you many entertaining stories about several curious things I have seen.' The children looked with delight at each other ; then at their father and mother ; and then with wonder at the stranger.

' My dears,' said their father, ' this gentleman is my particular friend, his name is Mr. Selby,—we were playfellows when we were as young as you are. The reason you have never seen him is, because he

has been many years travelling in foreign countries; and, when you deserve the favor, I dare say he will oblige you with recounting something of what he has seen and heard.

'Do, my dear sir, continue the account you were just giving us of the volcano you visited in Sicily.'

'Volcano! volcano!" repeated Frederic and Lucy, with astonishment. 'Pray, mother, what is a volcano?'

'A volcano,' answered Mrs. Johnson, 'is a mountain, with a large opening at the top, like that of wells and coal-pits. This opening, you must remember, is called the *crater;* and out of it issues flames and smoke, for the mountain is on fire within, and burns with great violence. Here is a picture of one in the night-time. Sometimes great quantities of stones are thrown out of the mouth of the volcano; and melted stones, red hot, run down the sides of the mountain, like streams of water, and whatever is touched by them is destroyed: these melted stones are called *lava.* You must remember, the mouth, or opening of the mountain, is called crater,—and the melted matter, which runs down its sides, lava; because Mr. Selby will have frequent occasion to mention these names in giving his account, and, if you forget them, you will not understand his strange narrative.'

The children were filled with amazement, for they had never heard of anything so wonderful as a burn-

ing mountain. Mr. Selby, perceiving how much their attention was fixed, began to give them a description of the mountain he had visited.

MOUNT ETNA.

'I agreed with a party of friends,' said Mr. Selby, 'to visit the summit of this extraordinary mountain; but, as we were unacquainted with the roads, we were obliged to procure a guide. Etna is a mountain of such an immense size, that you can form no idea of it from any hill you have ever seen.

'This mountain you must suppose to be divided into three circles, or, as they are called, *regions*. The first is named the Rural Region, because it is a beautiful, pleasant country of cornfields and gardens, vineyards and orchards; the second is called the Woody Region, from the magnificent trees which adorn it like a vast green belt surrounding the mountain; and the third, the Barren Region, from its being always covered with snow;—but, the better to enable you to understand these divisions I will show you an outline of it,' added Mr. Selby, taking a pencil out of his pocket.

Frederic and his sister both declared they could now easily imagine how the mountain was divided into three belts, the top one like a white cap; but they thought it very wonderful that the region next

the fire should be covered with snow. Lucy supposed the great heat of the flames would 'soon have melted the snow all away.'

'Sometimes, I believe, it does in part,' replied Mr. Selby, 'for it has frequently happened that torrents of hot water have rushed down the mountain. But I must proceed in telling you my journey. We soon passed through the rural, and entered the woody, region, where our admiration was called forth by the

immense size of the trees, especially some most extraordinary chestnut-trees, — one, in particular, our guide pointed out, whose branches extended so wide, that a hundred mounted horsemen could be sheltered under its shade ! Its branches extended 200 feet in circumference. It is called the *Castago dei centi cavalli*, or ' chestnut of a hundred horses.' It is found marked in an old map of Sicily near 100 years old ; hence its age must be considerable.

' Do chestnuts, such as we eat, grow on such great mountain trees ?' said little William.

Yes, my boy ; in a ball, like that of a sycamore, horsechestnut, or shagbark.

' But chestnuts are flat on one side.'

Yes, because two of them grow together in a round ball or pod looking like a large bur, or prickly plant. This chest or green covering is very bitter, but the nuts themselves, you know by taste, when boiled, are as sweet as any nut. The chestnut-tree is very ornamental, whilst growing, and very durable for timber and fences and posts. A gate-post or house-rafter will remain sound for more than 50 years, and the growth of the tree is very rapid.

' If it is such a beautiful tree, why is it not planted in our common ?' said Lucy.

Probably because it is a fruit-tree, and exposed to injury from mischievous boys. But this species of nut is sweeter and more nutritious in some countries than others ; in the south of France, Spain, and Cor-

sica, it constitutes, when boiled, the principal food of the poorer people. Some of the French even make their fine chestnuts, which are grafted, into cakes, confectionery, puddings, and bread.

This is the shape of the twigs on which they grow, with leaves, flowers, and fruit. The nuts

which fall to the ground fatten swine, and a squirrel here and there gambols among the branches.

'Chestnuts do not grow in our wood-lot,' said William, 'but walnuts and hazel-nuts do, and pigs root round the trees with their noses.'

Walnuts and hazel-nuts grow in oval or round bitter-tasting pods; but I will show you the difference between the three fruits. The walnuts are seen under the letter *a* in the picture, and, on account of the great quantity of oil in them, are hard of digestion; they are eaten in desserts along with apples, the cider in the apples qualifying the oil, otherwise it is best to leave them to the squirrels. Two chest-

nuts, and the prickly pod, holding two more, are seen above the letter *b* in the picture. Chestnuts are indigestible, unless boiled or otherwise cooked, when they become very nutritious. The hazel-nut or filbert is above the *c* in the drawing. Farmers would reap much advantage by planting butter-nuts, chestnuts and walnuts, the wood being very valuable,and the fruit commanding a great price.

But I must resume my journey. Our attention was attracted by the beautiful plants, whose sweet flowers perfumed the air. Slowly we wandered through this party-colored, fragrant, delightful forest, unwilling to quit the examination of its beauties ; but the setting sun reminded us to seek a habitation or shelter for the night.

No human dwelling being nigh, we were glad to make our abode in a large cave, which our guide

told us was called Goats' Cave, because these animals frequented it in bad weather. We had seen several goats skipping from point to point as we passed, or lying down in the shade. We broke off some branches of oak to make a fire, and, after rubbing two dry pieces together very hard, sparks of fire were at length produced, and we soon had a comfortable blaze. We had brought with us a tea-kettle, sugar, tea, and bread ; but in vain we looked for water, and were beginning to fear we should not be able to make tea, when we fortunately espied a large quantity of snow, heaped up in the corner of the cave ; with this we filled our tea-kettle, and made a comfortable supper. We then gathered the dry leaves of the oaks, strewed in front of our cave, to make our bed, and, being greatly fatigued, we gladly laid down to rest. But our sleep was much interrupted by the terrific noises which issued from the crater of the burning mountain, resembling loud thunder.

Next morning we again melted snow, and made our breakfast as we had done our supper. We had risen very early, and, when we left the cavern, the sun had not risen : the gloomy shades of the forest, the sullen noise from the mountain, (which was not so loud as at night,) and the dim view of the sea at a great distance below, made the scene awful and grand. Every one's mind was employed by his own thoughts, reflecting on the almighty power of the Creator, and we proceeded in silence.

When we entered the highest region, which, as I before told you, was covered with snow, we were desired by our guide to step with great caution, as the melted snow frequently settled in pools, which were difficult to discover, because the surface of the water, as well as the snow, was often covered with black ashes. The ascent over the ice and snow was steep and fatiguing, but we were not discouraged, and finally arrived at an ancient ruin, where we rested.

Owing to the beautiful clearness of the air, we observed the stars, which were yet shining, and appeared much larger than they did when we were at the foot of the mountain. We went yet a little higher, until we felt the warm air from the crater; but we did not approach the crater itself, for that is extremely dangerous, and many people have lost their lives by venturing too far. We were fully recompensed for the labor of ascending this high mountain, by the exceeding fine prospect which the height enabled us to view. So much were we delighted, we scarcely could prevail upon ourselves to leave the enchanting spot.

We had not descended far on our return, before I suffered greatly from my own heedlessness; for, without considering the ice on which we were treading, I thoughtlessly turned to speak to one of my friends, when my foot slipped, and I fell with great violence. For some time I was in much agony, from the extreme pain in my ankle; but, as it was im-

possible to procure assistance, I was obliged to rise and limp on as well as I could, my friends kindly supporting me under each arm.

At length we arrived at the cave where we had slept the previous night. We were somewhat startled and surprised to find our bed of leaves occupied, as far as the darkness of the cave would permit us to observe, by a venerable patriarch of the goat kind, with a long white beard, and piebald, or black-white-chocolate-colored hide, and a formidable butting pair of horns ; at his feet lay a kid, fast asleep. The old goat seemed in no hurry to retreat, and the guide told us he had formerly been tamed.

' Do goats live on chestnuts ?' said little William.

Mr. Selby said he believed they subsisted principally on green leaves, twigs and buds of all kinds.

'Whilst they are skipping from rock to rock, why don't they fall as you did, and sprain their ankles?' added William.

They climb mountains to secure themselves from wild beasts, and to procure delicate food, and their legs and hoofs are shaped for these purposes. Dr. Clarke says in his travels: 'Upon our road from Jerusalem to Bethlehem, we met an Arab with a goat, which he led about the country for exhibition, in order to gain a livelihood for itself and owner. He had taught this animal, while he accompanied its movements with a song, to move upon little cylindrical pieces of wood, placed successively one above an-

other, and in shape resembling the dice-boxes belonging to a backgammon table. In this manner the goat stood, first upon the top of one cylinder, then upon the top of two, and afterwards of three, four, five, and six, until he remained balanced upon the top of them all, elevated several feet from the ground, and with his four feet collected upon a single point, without throwing down the disjointed fabric upon which he stood. The practice is very ancient. Nothing can show more strikingly the tenacious footing possessed by this quadruped upon the jutty points and crags of rocks ! and the circumstance of its ability to remain thus poised may render its appearance less surprising, as it is sometimes seen in the Alps, and in all mountainous countries, with hardly any place for the feet, upon the sides and by the brink of most tremendous precipices. The diameter of the upper cylinder, on which its feet ultimately remained, until the Arab had ended his ditty, was only two inches, and the length of each cylinder was six inches.'

Goats appear to court danger in climbing, reckless of consequences. I heard once of some of them who found out a short cut from one mountain to another by a precipice across the valley 150 feet high. The road for a considerable distance was but about two or 3 inches wide, consisting of a little jagged cornice or shelf, with perpendicular rock above and below. This did very well whilst all passed one way ; unfortu-

nately however, one day two goats, when in the middle of the passage, met face to face. Their loud bleating collected hundreds of people in the valley, but no assistance could be given to these poor animals, perched 150 feet in the air, where human foot had never trod. At this moment, one of the goats kneeled down and the other carefully walked across his back, and both were safe. "There is a special providence in the fall of a sparrow," and what was not in the heart of man to conceive was happily thought of by the native instinct, experience, or sagacity of a couple of brute nanny goats.

One species of goat or antelope, which inhabit the Alps and Pyrenees, and called Chamois, have longer hind legs than front ones, and make incredible leaps, sometimes ten or twenty feet. They browse on seemingly inaccessible heights, but are followed by daring hunters. When alarmed, they warn the flock by a loud hiss, which re-echoes through rocks and forests as forcibly as a rail-road whistle, although this noise proceeds only from the nose of the Chamois.

Your mother no doubt has told you the true story of Selkirk or Crusoe and his goats, whom, for their amusement and his own, he taught to dance.

But to resume my journey. My friends prepared a bed of leaves, and, when I had lain down on it, it was such a relief, I thought I had never lain on a bed so delightful. After a comfortable cup of tea, I fell into a sound sleep, and, when I awoke, I was much refreshed, but incapable of walking. Our guide soon procured me a sure-footed horse, and we safely descended through the woody region to the bottom of the mountain. I had great reason to lament my carelessness, for my ankle became so painful and

swelled, it prevented me from making any more excursions for a long time.

'Does lava run from the crater?" said Lucy.

It does commonly; but the terrific element sometimes bursts the sides of the mountain, taking a new, unexpected, and destructive track across cities and villages to the ocean.

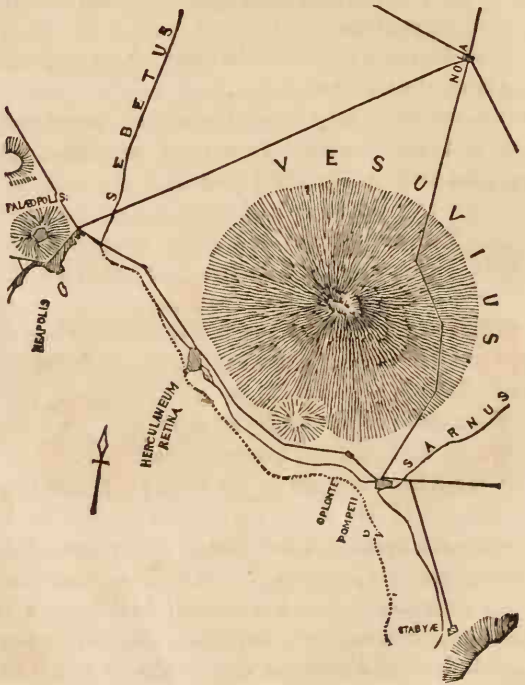
The kingdom of Naples has two volcanoes, one of them on the island of Sicily, and the other near the great and beautiful city of Naples. In eruptions of this last volcano, called Vesuvius, nearly 2000 years ago, the cities of Pompeii and Herculaneum were destroyed by the fire bursting the top of the mountain. Pompeii was covered 50 feet deep with ashes, mud, pummice stones, and cinders; but a stream or river of sulphurous lava ran a great distance and overflowed Herculaneum with a sea of fire; and this last substance, lava, when cool, is almost as hard as rock. Here is a drawing of the position of these cities.

Both cities remained buried till a few years ago, when an excavation of Pompeii was begun.

'What are the lines on the map, sir?' said Lucy.

The dotted line shows the present outline of the coast,—the first black line that of the coast at the time of the eruption, A. D. 79. The other lines show the roads leading to Pompeii. In the year of our Lord 79, when the first eruption happened, the beautiful heights of Vesuvius, like those now round Boston, were covered with villas, country seats, palaces,

gardens, and vineyards. Most of the vast populace of the cities of Herculaneum and Pompeii were sitting in their large amphitheatres, seeing combats between wild beasts, the cruel sports of the ancient Romans, when the bursting of the mountain happened.



Dense clouds of smoke, dust, and cinders turned day into night for three days, during which profound darkness continued, lighted only by fresh floods of flame from the mountain. The dust or ashes was so abundant in the air that it reached Africa, Syria, and Egypt. It not only destroyed fields and towns, but such sulphurous quantities of it filled the air or fell into the sea, that the birds and fish of all the neighboring coasts were killed.

So completely was Pompeii buried that the articles of use or luxury, houses, streets, and utensils, have been preserved nearly 1800 years.

The above drawing is a portion of Pompeii, restored to light after a lapse of seventeen centuries, during all which time new eruptions have occurred, at intervals of three or four years. At the latest eruption, the stream of lava was a mile and a half broad and injured or destroyed 800 houses.

THE SPIDER.

The next morning the children went with their mother to visit the lark's nest. Little William made one of the party ; and highly delighted was he to go, for much he wished to see the nest and all the little nestlings.

The children jumped, and skipped, and sung, through the fields, until they came to that in which was the nest ; when they arrived within a few yards of it, each was careful to tread quite softly, and not to make the least noise, lest they should disturb and frighten the poor little birds ; but, notwithstanding, the old birds, ever watchful for the safety of their young ones, were alarmed, and flew up. The children slowly approached, and, peeping into the nest, saw all the little family well, and as brisk as ever.

They strewed the crumbs they had brought around the nest, pleasing themselves with imagining how the parent birds would rejoice to find so much good food so near home ; and then they left the nest, in order to gather some beautiful flowers, that grew in this and the neighboring pasture. In doing this, Lucy saw another bird fly from the hedge, which Mrs. Johnson told her was a goldfinch. They soon found the nest. which contained five very pretty speckled eggs, their main color being white, gently tinged with blue, but the delicate spots upon them were of

a dark purple hue. The groundwork of the nest was made of moss and fine grass, so curiously put togeth er as not to have a single leaf of the grass or moss project, and lined or felted with wool. No weaver could have better knotted and woven and put on the map or soft covering over the inside surface, than these little feathered mechanics. Frederic asked his mother to tell them more about the mother birds.

'I will tell you,' said Mrs. Johnson, 'what our neighbor, Mr. Bolton, told me, 'On the 10th of May

I observed a pair of goldfinches beginning to make their nest in my garden. They had formed the groundwork with moss. grass, &c. as usual ; but, on my scattering small parcels of wool in different parts of the garden, they in a great measure left off the use of their own stuff, and employed the wool. Afterwards I gave them cotton ; on which they rejected the wool, and used the cotton. The third day I supplied them with fine down, on which they forsook both the others, and finished their work with this last article. This nest was beautifully tied and wove.

Are birds ever so very tame ?' said Lucy.

Birds, although seemingly shy, have a friendship for men or boys who leave them unmolested. They build near them to avoid birds of prey. A shed in our neighborhood, which long had a wren's nest under its eves, was taken down in spring. The owner, observing the old birds fidgeting about, stuck the skel-

eton of a horse's head on the top of a pole, and the birds within an hour took legal possession, by filling the cavity of the brain with sticks hay, hair, and wool, and, in a few days, nine little black and white speckled eggs were in this strange-looking wren-house, which continued their domicil for many years, till the tall pole was violently blown down in an October gale, and the old horse's head broken to pieces.'

Each of the children now gathered a large bunch of wild flowers, for there were a great many different kinds in this field, and about the hedge-side; and, when their mother saw they had sufficient, she proposed going to a green bank, which they saw at a little distance, to rest themselves, and examine the beauty of the flowers. They all were willing to do this, for, with running and jumping they had nearly tired themselves.

When they were seated, they began to open their nosegays, and Lucy showed them some wood-wort, which she had at first greatly admired for its dark purple flowers, curiously dotted with very small white spots; but she found it had so disagreeable a smell, that she thought it was better to throw it away; and she was going to do so, when she observed two of the leaves were curiously folded together; and, on opening one, exclaimed, 'O, mother! O, Frederic! look, what a beautiful, beautiful spider!' It was, indeed, an extremely beautiful insect, having a pink back, lightly striped with brown, and a yellow belly;

and its legs were so fine, that the whole party wished for a microscope, to enable them the better to discern their delicate form.

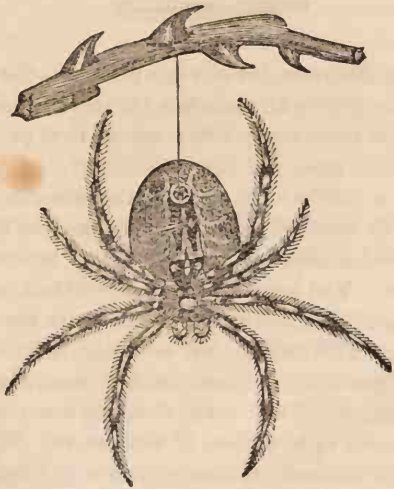
Lucy saw that the leaf of the woodwort had been closed by the spider's threads, which were joined to each side of the leaf, and then drawn together, so as to make the leaf into a three-cornered shape. There was a little round ball woven also by the spider; and, when Lucy gently opened it with a pin, several very small balls rolled out; these, Mrs. Johnson informed them, were the spider's eggs, which she had thus enclosed in a bag of her own spinning, and that these eggs would all in time become insects.

'Does an old spider learn her daughters,—all her two or three hundred young ones, to spin, reel, twist and weave, mother?' asked little William.

'They are born with an instinct to do all that is necessary for their existence.

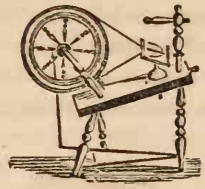
'You, Lucy, have been at Lowell, and seen 70 spindles turning, and 70 threads spun by one person as easily as your grandmother used to spin a

single thread on the old-spinning-wheel in our attic. What 70 persons could hardly accomplish in a day a few years ago, is now done by a Lowell girl, and admirably done, by means of a single Spinning Jenny. But art is only an imitation of nature ; and in this particular case, and perhaps in all cases, is inferior to nature. This little pink spider is now suspended from a twig, seemingly spinning one thread ; what if I tell you, that, seen through a microscope,



she is absolutely seen spinning 5000 threads, and twisting them by some inconceivable means into

the single thread by which she is lowering herself to the ground ? This despised spider is doing the work of 70 Lowell girls, operating each of them with 70 spindles ; or of 5000 old spinning-wheels, laboriously

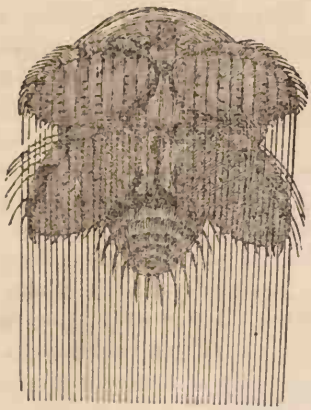


twirled by 5000 females of years gone by—the spider braiding or gluing all these threads into a single tiny rope, at the same time, with mathematical precision. And perhaps there are a thousand other spiders in this field as busily employed in the manufacture of nets and fly-traps, of such gossamer fineness that silly gnats and musquitos are entangled before they are aware. You have read the fable of Gulliver, tied down in a similar manner by pigmies with needlefuls of thread. The little spider, no doubt, has no other means of providing a dinner for her somewhat numerous family. The works of nature are, however, too wonderful to be spoken of with levity. We feed upon useful animals, spiders upon noxious insects.

' How does the little spider spin at once these innumerable threads ?' said Lucy.

' You see five little dots in the insect's back. Natu-

ralists call them *spinnerets*, these may be seen, in large spiders, by the naked eye. When we look at these spinnerets with a strong magnifying glass, we see that they are divided into regular rows of minute points, about a thousand to each spinneret,—making 5,000. These little points are called *spinnerules*. Each of them may be regarded as a little tube, from which the spider spins a thread of amazing fineness, and, within the distance of a single inch, weaves and warps it into a rope of 5000 strands or threads.



'Here is a drawing of the five dots or spinnerets greatly magnified; but, as it would be impossible to show you 5000 threads in so small a space, only 50

are represented. Each thread in the picture, therefore, stands for 100. It is most wonderful that a single thread of spider's web should be formed of 5,000 smaller threads. But so naturalists say it is. One of them estimates four millions of these little threadlets, in a small spider, to be only equal in size when united to a hair in a man's whisker.

'What was the necessity, mother, for having them in this manner? and why did not the great and good Creator have one thread spun out from a little spider, instead of 5000?' said Frederic.

The only reply I can give, my dear, is, that the present plan makes the thread stronger than it would otherwise be; for every ropemaker knows that the finer the threads are, of which his rope is composed, the stronger it is. The more we examine the works of the Great Architect, the more we are convinced of the wisdom and beauty of the design. Look at the endless varieties of spiders, plants, and all created things, and you find them skilfully fufilling their ends of creation. "In wisdom has he made them all." Look at the beautiful flowers in your hand; they neither toiled nor spun, yet "Solomon in all his glory" was not so richly or wonderfully arrayed as one of these lilies-of-the-valley, or as this skilful little pink spider. This despised insect and this nosegay, 'born to blush unseen,' show new beauties under the microscope, whilst human skill looks bungling in the comparison, under this severe magnifier of defects

invisible to the naked eye. New reasons for the wisdom visible around us are daily discovered in *all* things, though many have escaped human scrutiny for 6000 years till the present time, and millions on millions will remain for future discovery.

The beautiful pink spider had, all the time, been running about in the greatest uneasiness, from one leaf to another ; but they observed she never attempted to enter the opposite closed leaf, in which was another spider, like herself ; all the children pitied her distress, and, to relieve it, Lucy laid the piece of wood-wort upon the stump of a tree, near which they were standing. When the poor spider found herself at liberty, she soon began to unite the two torn sides of the bag in which her eggs had been wrapped. This she accomplished with much dexterity, and, when it was completely restored to its former shape, she began to fasten up the leaf, by spinning a thread from one edge of the leaf to the other, and then drawing these threads tight, until they brought both edges of the leaf close together, over herself and the bag.

When the children had fully gratified their curiosity, Lucy said she would run to the hedge-side, and lay the piece of wood in it, that the pretty spiders might enjoy themselves at full liberty. Frederic and William said, they also would like to run to the hedge-side ; and their mother gave them leave to go, saying she would sit on the green bank until they came back.

When they returned, they asked their mother many questions, more indeed than she could answer, but she told them, when they could read alone, she would give them a book containing accounts of insects, from which they might learn a great deal ; at

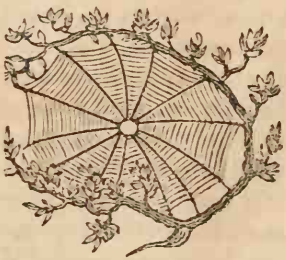
the same time, she was perfectly willing to tell them what she knew. 'O, pray do, mother !' cried Lucy ; I have often seen spiders running about the walls of the house, and have seen Betty brushing away cobwebs as she called them, complaining that spiders were constantly making them, but I used not to mind them. I only thought that spiders were ugly creatures, but, if you tell me anything curious about them, I will notice them when I go home.'

'Indeed, my dear, they are well worth observation ; and, if you had allowed a spider to run upon your hand, and had examined it narrowly, you would have seen it was far from ugly ; and the cobwebs, which I suppose Betty thought it a trouble to dust away so frequently, are really very curious things.

' When the house-spider begins to form her web, she usually chooses the corner of a room or a staircase or an elbow or twig of a tree, because she can then more easily fix the thread across from one wall to the other ; and, when she has got a sufficient number of threads laid one way, she begins to cross them the other way, until it is completely wove, rivetted, and knotted : when it is done, she conceals herself in a small hole, or cell, previously made in the corner of the nest. She is so diligent a weaver, laboring in her vocation, or for the support of her children, increasing faster than those of William's 'old lady that lived in a shoe,' she works all night, whilst

her victims the flies are asleep, not dreaming that the spider is mending her nets, or weaving new coils.

'There is a kind of spider, who can make a cell with a door to it, which she can shut or open at pleasure, and which perfectly secures her when she is likely to be disturbed by any larger insect. The spider weaves her web as symmetrically and as mechanically as our wire mouse-trap, to catch flies or small insects, which are her food. When they alight upon the web, their slender legs are soon entangled in the crossed threads or meshes, and, while they are struggling to get loose, the spider darts from her concealment, throws new diminutive ropes across the wings, head, or body of her victim, draws the cords tight, and, with thread upon thread in all directions, much the same as the Lilliputians bound Mr. Lemuel Gulliver, secures the unfortunate fly, and then greedily devours her prey.



There are other spiders which inhabit fields and gardens. I dare say you have observed the beauty of their webs, when they are covered early in the morning with dew, sparkling in the sun's rays. They are quite differently formed from the housespider's.

'Yes, indeed, both Lucy and I,' answered Frederic, 'have often admired those beautiful webs, and we have often seen long threads hanging from one tree to another, at great distances; were these also woven by the spiders?'

Yes, my dear; on those long threads, which the spiders weave, they transport themselves from one tree to another.

You and your father, Frederic, were admiring a spider's web on the door of our wood-house. Do

you know that, like Jonah's gourd, it was the silent work of a single short summer's night? and that millions of silken beams formed its rafters? Yet a spider is called one of the most disgusting objects in nature. Scavengers generally look disgusting, but they make clean work. 'There is a purpose to everything

under the sun,' and this insect is, as it were, a high constable in the fields, and ' takes the body' of all the loafing noisy insects on whose shoulders he can fasten his briærean claws ; even an intruding horsefly, bee, or diamond beetle, are ' ejected' by him, or eaten sans ceremonie. Here is a pretty daisy, fresh, fragrant, and beautifully colored. Were it not for the little pink spiders, a sort of police ' on duty,' it would have been eaten up by thousands of may-bugs. Cruel sportsmen murder the birds, the beautiful guardians of the fields, and, in the economy of nature, spiders are perfect ' sheriff-substitutes,' and enforce stringent or biting laws on trespassing insects.

' But, mother,' said Lucy, ' you said, the house-spider's threads crossed over one another ; but I do not remember seeing any threads in any of these webs.'

That was, because they are so very fine, replied her mother, and spun so close to each other. A spider's thread, as I have already told you, is much finer than a hair of your head ; but in some countries there are spiders of much larger size, whose threads are a great deal stronger. A Frenchman once undertook to manufacture, that is, to prepare and spin, the webs into threads strong enough to be woven into stockings ; and he actually did weave one pair of stockings, which were very beautiful, and were kept as a great curiosity ; but the thread, made from the web of the spider, was not near so strong as that made from the web of the silk-worm.

'O, silk-worms, mother!' exclaimed Frederic, I want to know a great deal about them.'

But, my dear, you must at present be satisfied with what I have told you about spiders, for we have been a long time from home, and must hasten our return, for I have several things to do before dinner. You now see what an advantage it would be, if you read without assistance. I should then give you proper books, and you might read to your sister all you want te know; at present you are entirely dependent on me for information, and, if business, sickness, or company, prevents my instructing you, you must remain ignorant of much useful and pleasant knowledge.

They walked quietly home, Frederic and Lucy declaring that they would take great pains to improve themselves, that they might soon be able to read all the pleasing books their mother promised them.

INVENTIONS

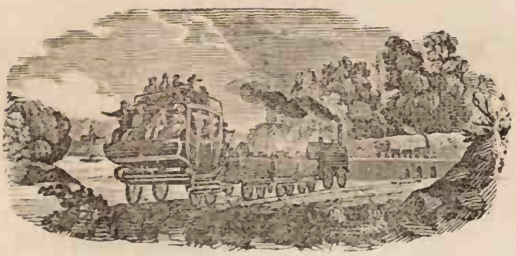
A few days after, Mr. Selby paid his friend a second visit. The children were rejoiced to see him, and, as they went out to meet him, he inquired if they had all been very good. On their father and mother assuring him they had, Mr. Selby told them he had not forgotten his promise of gratifying them with accounts of his travels in different parts of the

world ; and, if it was agreeable to Mr. and Mrs. Johnson, he would stay that afternoon, and relate his journey to Glasgow.

I had been in Scotland when I was a boy, but, in my first journey, I was as many days on the road, in order to travel the same number of miles, as I now quietly rode in the same number of hours ; such has been the rapidity of improvements in journeying in the course of my short life.

The children anxiously asked Mr. Selby to tell them why this great change had happened. 'There are only 60 minutes in an hour, and 1440 in a day,' said Frederic ; and little William added, that 'he had been thinking whether Hop-o'-my-Thumb, with his seven-league boots, could have done it in so short a time.'

I like to hear your doubts, that I may remove them, said Mr. Selby. The story of the boots, William, was a fiction ; but reality, in our day, outruns fiction



with regard to rail-roads and electric telegraphs. Shakespeare's wildest imaginings only 'put a girdle round the earth in 40 minutes,' whereas the telegraph might do it in two seconds of time. That is, taking the Boston and New York wires as a criterion, a message could absolutely be expedited 200 times more rapidly by them than by the poet's Queen Mab and Robin Goodfellow, or fairy-line ancient conveyance.

'Do please tell us, then, about your last journey,' said Lucy.

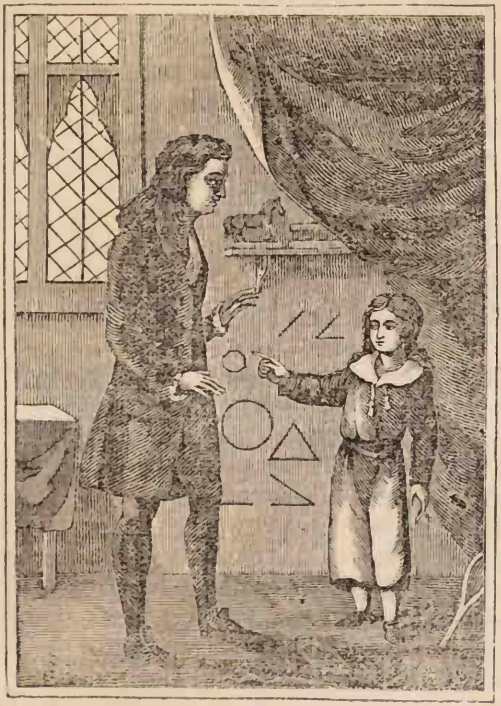
Mr. Selby said, in order to do this, he must first tell them about a poor little sick boy, and about some ancient toys for children, moved by steam power, more than 2000 years ago, yet in some degree connected with my true story. Useful subjects must be carefully explained in order to be understood.

When I reached Glasgow, I was introduced to an elderly gentleman, whose name was

JAMES WATT.

Watt was born at Greenock, in Scotland, Jan. 1736. He was the son of a ship-chandler. From the extreme delicacy of young Watt's health when a child, he was unable regularly to attend the public school, so that much of his instruction was received at home. His mother taught him reading, and his father writing and arithmetic; he thus acquired those habits of inquisitive and precocious reflection, so often ob-

served in feeble-bodied children, when taught by their kind parents. A gentleman one day calling upon his father, observed the child bending over the marble hearth and wainscoating, with chalk in his hand.



'Mr. Watt,' said he, 'you ought to send that boy to school, and not let him trifle away his time at home.'

'Look how my child is employed, before you condemn him,' replied the father. The gentleman then approached the child, and found that he was trying to solve a problem in geometry. He put some questions to him, and was astonished with the mixture of intelligence, quickness, and simplicity in his answers.

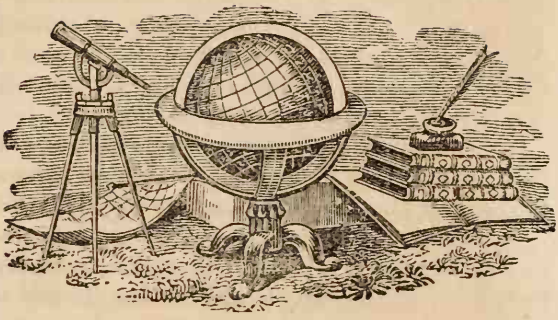
In this way, confined by ill-health, young Watt, always busy in early years, acquired at his father's fireside that general information for which he was in after-life remarkable. His father for his amusement presented him with a number of tools, such as are used in cabinet-work, with which young Watt began to exhibit his mechanical taste in the fabrication of numerous toys, and among the rest a small electrical machine.

One day, having accompanied his mother on a visit to a lady in Glasgow, the boy, at the request of the lady, was left behind. The next time Mrs. Watt went to Glasgow, her friend said to her, 'You must take your son James home; I cannot stand the degree of excitement he keeps me in; I am worn out for want of sleep. Every evening before ten o'clock, our usual hour of retiring to rest, he contrives to engage me in conversation, then begins some striking tale; and, whether humorous or pathetic, the interest is so overpowering, that the family all listen to him with breathless attention, and hour after hour

strikes unheeded.' This wonderful faculty of story-telling, which robbed the Glasgow lady of her sleep, Watt preserved through life to his dying day, to a degree unparalleled perhaps, except in his cotemporary, and fellow-countryman, Sir Walter Scott.

Young Watt returned home to occupy himself with the sciences. The whole range of physics had attractions for him. In excursions to the banks of Loch Lomond, he studied botany, entered into geological observations among the rocks and secondary formations, and collected traditions and ballads among the clansmen and highlanders. At home, during his frequent hours of ill-health, he devoured books on chemistry and general science, natural philosophy, medicine, and surgery ; the detailed description of diseases was familiar to him. In short, by incessant reading and mental activity, he acquired and digested a vast mass of miscellaneous and scientific information.

The profession, to which young Watt was put apprentice, was that of mathematical and nautical instrument making, for the acquisition of which he went to London. ' Thus,' says M. Arago, ' the man who was about to cover England with engines, in comparison with which the antiqne and colossal machine of Marly is but a pigmy, commenced his career by constructing, with his own hands, instruments, which were fine, delicate, and fragile, — those small but admirable reflecting sextants used in navigation.'



In 1757, at the age of 21, he commenced business as a mathematical instrument maker in Glasgow. At first he experienced great opposition—one of the privileged corporations regarding him as an intruder, and refusing the young mechanic the privilege of setting up a workshop. In this dilemma, the university gave him a room, and conferred on him the title of ' mathematical instrument maker to the College of Glasgow.' In this university was a cluster of eminent men. Adam Smith, Robert Simson, Drs. Black and Robinson, were the professors. They saw his worth, and Watt's new position brought him into contact with these great men. ' I had always,' says professor Robinson, ' a great relish for mathematical and mechanical philosophy. When I was introduced to young Watt, I saw a workman, and expected no more ; but was surprised to find a philosopher,

younger than myself, and I was rather mortified at finding Watt so much my superior. Whenever any puzzle came in the way of us students, we sent to Watt.' This and similar records figure his early life —a young, amiable, and ingenious man, a great favorite with professors and students, occupied a great part of the day in his workshop, but constantly engaged in the evening in some profound or curious question in mathematical or physical science; aware at the same time of all that was going on in the arts.

'Did young Watt still continue sick?' said Lucy.

Yes, so much so, that it was the cause of his return home from London. In 1763 he enlarged his business by including engineering; and began to be consulted in the construction of canals, bridges, &c.

and in the following winter, professor Anderson, finding that a small steam-engine would not work, sent

it to young Watt for repair ; it was this model of Newcomen's engine that begot in Watt's mind the germ of those ideas which led to such gigantic consequences. The little black model on the young mathematical-instrument-maker's table was the condensed epitome, as it were, of all that the world then knew of steam-power. In the brain of young Watt, bending by candle-light over the broken model, lay, as yet undeveloped, all that the steam-engine has since become. This accident to an imperfect model was the cause of as great a revolution in mechanics as had been produced by the art of printing.

' But I thought,' said Frederic, ' that steam power began to be applied to mechanical purposes about the years 1778 or '80.'

Yes, said Mr. Selby ; the delay, for 14 years, was owing to the poverty of young Watt.

IN CONTINUATION.

The two greatest inventions yet found out, said Mr. Selby, namely, printing and steam power, were originally contrived for children's toys, so you see, my young friends, there is philosophy, ingenuity, and utility even in making a plaything. A citizen of Harlaem, named Coster, whilst walking in a wood, began to cut letters and pictures on the bark of the beech ; with these letters he enstamped marks upon

paper in a contrary direction, in the manner of a seal, until at length he formed a little primer or picture-book for the amusement of his grandchildren, or of his sister's children. Such was the discovery of the art

of printing, which will make readers of all mankind, and without the aid of which the reformation of Luther could not have been established.

Seals, which are a 'miniature in little' of the art of printing, were used in the times of Darius and Ahasuerus, several hundred years before the Christian era, and perhaps the Chinese stamped the letters now used on tea-chests, in the same manner, some

thousands of years ago ; yet, so prone are mankind to do ' as grandfather did,' that no advance was made in improvement till the times of Coster and Guttenberg.

The origin of the other invention I will endeavor briefly to relate to you.

STEAM, said Mr. Selby, or, as it was anciently called, ' water transformed into air by the action of fire,' was described in the writings of Hero, a Greek, 120 years before Christ, in an account of a toy for children, as made to produce a rotatory motion ; so you see, my dears, ancient philosophers fabricated toys to go by steam 2000 years ago, in much the same manner as described in your Boy's Own Book, or in Parlor Magic, with this difference only that his toy acquired perpetual motion by steam, whilst your Prancing Dragoon and Bowing Beau were se-

cretly kept nodding or galloping by unseen magical weights underneath the table or statue.

The principle of Hero's toy, however, was inferior and different from that of steam-engines, in which the power consists not in the mere re-action caused by steam, but in the prodigious expansive force of steam itself. An inch of water is, on its conversion into steam, expanded so as to fill the space of a foot. You, Frederic, have seen gunpowder explode, but this is nearly 8 times as great as the expansive power of gunpowder. If by any means we could catch water in the act, as it were, of passing into steam, so as to obtain the use of this enormous expansive force for our own purposes, young Watt thought it was evident that we could produce most powerful effects by it. To do this—to catch the water in the act of passing into steam, and to turn the expansive power to account—is the whole purpose of steam-engines.

'Was this power known formerly?' asked Lucy.

Even this expansive force was in some degree known to the ancients. Often, in casting fine metal statues, when a drop of water was left in the clay or plaster moulds, an explosion, attended with disastrous accidents, resulted. Arguing from such instances, ancient naturalists accounted for earthquakes and submarine explosions, by supposing the sudden turning into vapor of a mass of water by volcanic heat.

'Such as that of Etna and Vesuvius,' said Lucy.

Nor were the ancients afraid of handling this po-

ent power. In the images of the ancient gods, as in Hero's toy, were concealed crevices, containing water with the means of heating it; and tubes, proceeding from these crevices, conducted the steam, so as to make it blow out plugs from the mouths and foreheads of the hollow images, with loud noise, and seeming clouds of smoke.

'Please tell me, sir, more about Hero's toy,' said William; 'what is a hollow image?'

All images are not hollow; but cast ones, of the size of men or boys, sometimes are hollow likeLucy's doll. Whilst in India, I visited a huge statue of solid granite, 30 miles from Seringapatam, and, as measured by Rev. Dr. Buchanan, nearly 70 feet high. It represents Gomuta Raya, a celebrated Hindoo saint. It stands on the summit of a conic granite hill about 200 feet high, which serves for a pedestal. The statue still constitutes a part of the solid rock, which originally may have been 300 feet high; the stone, which anciently formed a part of the mountain, having been chipped or carved away. The hill probably was anciently a steep cone, or peak, of which some bold sculptor, or succession of sculptors, have taken such magnificent advantage. It stands boldly up against the sky, and I certainly never saw, in all my travels, any work of man, which gave me so complete an idea of a giant, or colossal image.

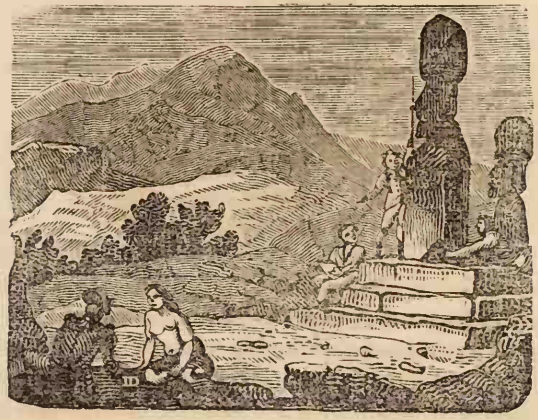
An image or monster statue in Egypt, it is true, with the head of a virgin and the body of a lion, is

said to be 163 feet high ; but it stands on a plain, and is half buried in moving sands.

Hero describes one of the pagan impositions by smoke and fire through hollow molten images. To accomplish this trick, he recommends vessels half full of strong wine, or other combustible liquids, to be concealed in two images of men, standing on each side of the altar. From these vessels, tubes in the form of bent syphons proceed along the arms of the images to the tips of their fingers, which were held over the flame of pagan sacrifice. Other tubes

from the same vessels proceeded downwards through the feet of the images, communicating through the floor with the altar and the fire.

In Asia are many heathen gods, carved from hills, and the pagans worship the work of their own hands, but, with all their superstition, they prefer making gigantic monsters.



Hero wrote 2000 years ago ; yet. from his time to the 17th century, no advance appears to have been made in the application of steam. The very remembrance of it, like that of the Greek fire, seemed lost, till Charles I. of England employed De Laus in designing fountains, grottoes,&c. who revived in sub-

stance the artifice mentioned by Hero, in the shape of a steam-toy ; so that, my dears, toys are often the harbingers of the greatest inventions. Men try new experiments to please their little ones, and stumble, as it were, upon important discoveries, which have escaped the most profound research. Even the beautiful Roman aqueducts were built on a level a-

cross vallies by arches and viaducts, like the Erie canal, because they were ignorant of the improved method by pipes, as in the Cochituate, Croton, and Fairmount water-works. But the skill of the engineer de Laus was eclipsed by that of the marquis of Bridgewater, in 1663, who describes among other things a mode of raising water 100 feet, and which will drain all sorts of mines, and furnish cities with water, though never so high-seated.

It is necessary, my young friends, in describing inventions, to follow their progress step by step. In 1699 Mr. Savary exhibited a model for draining

mines ; succeeded by one from Dennis Papin, who did not work out his own conceptions,—did not perceive all their conveniences. The next was by T. Newcomen, an ironmonger, in the year 1705. Soon after, the celebrated Smeaton employed his skill, but no progress was made till in the hands of Watt.

Young Watt was a man with whom everything became the beginning of a new and serious study ; accordingly, not content with repairing professor Anderson's model, he devoted himself to a thorough investigation of the machine. Directing his attention first with all his profound physical and mathematical knowledge to its working, ' he determined the extent to which the water dilated in passing from its liquid state into steam — the quantity of water which a given weight of coal would vaporise—the quantity of steam in weight, which each stroke of one of the machines of known dimensions expended—the quantity of cold water which required to be injected into the spindles, to give the descending stroke of the piston a certain force—and finally the elasticity of steam at different temperatures.

But I am certain, said Mr. Selby, that my patient little friend William ought to have a moment to ask questions about hard words, which I necessarily use, and it is time he should have some relaxation, in skip-jack affairs, and hop-step-and-jump exercises. And Frederic will wonder how an invalid boy could enjoy himself apart from society, without amusement

and exercise. But young Watt in childhood possessed all he wished ; his scientific pleasures of reading, sketching, and experimenting in Euclid, Newton, and other mathematicians, made these philosophers his playmates, with whom he enjoyed himself in books. As to exercise, the machinery made by means of his cabinet-maker's tools, at intervals, engrossed his attention. They were his toys and gymnastics.

MR. SELBY'S SECOND VISIT.

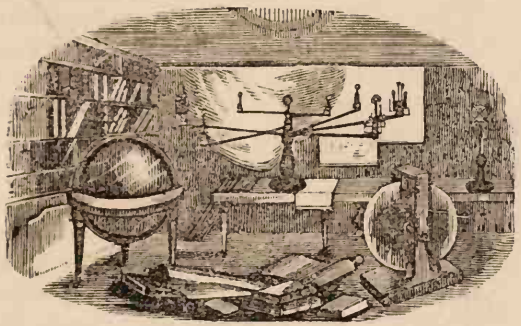
Mr. Selby called the next day. After dinner, the children were impatient ; and he said :

My young friends, you will think that all these investigations would have occupied the lifetime of a laborious philosopher ; but young Watt brought all his numerous and difficult researches to a conclusion, without allowing them to interfere with the labors of his workshop, or with his evening amusements with his friends. The evils of Newcomen's old machine Watt remedied by a simple but beautiful contrivance —his *separate condenser*—a metallic vessel in which water or air are condensed by heat. The cylinder was thus left a vacuum, without having lost any of its heat by the process ; the piston now descended with full force ; and, when the steam rushed in from the boiler, no portion of it was wasted in re-heating it. The

old evils were thus happily overcome ; but another contrivance was needed, to withdraw the accumulated water, air, and vapor ; and this young Watt accomplished by his *condenser pump.* The power of the machine was diminished by this invention, but the total gain was enormous,—equivalent to making one pound of coal do as much work as had formerly been done by five pounds in the old engine ; and, since the year 1780, improvements have continued till one pound of coal does the work of the 20 pounds in Newcomen's machine. Numerous other improvements were made by Watt within two years of his first inspecting the old model.

One would suppose that, when the fact of the construction of this engine, which has since revolutionized mechanical skill throughout the world,—which may, by facility of transit by sea and land, form all mankind into one family, turning their swords into pruning-hooks,—when this fact was generally known, that it would at least have displaced the expensive process of draining mines by the old tedious engines. This, however, was not the case. Watt himself was poor ; but in 1769 Dr. Roebuck became a partner. He soon became embarrassed ; and young Watt, till 1774, was employed in engineering, canals, &c., allowing the steam-engine to lie, like lumber, in an old factory of delft ware—the same engine, that is now applied to all purposes, and saving the labor of millions of people and horses, was stowed in an attic.

What Johnson says of Goldsmith might be said of Watt—' he touched not that which he did not adorn.' In the course of his busy surveys, he improved all the instruments he used, and invented among other things the chronometers for measuring arms of the sea, and many scientific articles. He was never



idle. At length in 1774 Watt entered into partnership with Mr. Bolton, a man of science and enterprise. Bolton & Watt's first business was to procure a prolongation of Watt's patent-right, which had been procured in 1760, and was nearly run out. The value of the invention began to be appreciated only when the enterprizing and wealthy Bolton patronized it. A strong opposition was made in parliament, and out of it, by engineers and coal-miners, who wished to pirate the invention. But the patent was renewed ; and Bolton & Watt agreed with the

interested miners that the patentees should receive from those who used the machine *one third part of the value of the coal saved by Watt's engine.* This seemed a trifle; yet, in a single year, Bolton & Watt received from the single coal-mine of Chasewater, £2500 (about $100,000), for each engine, instead of the value of a third part of coal saved, which would have nearly doubled that sum. Mr. Watt knew the quantity of coal consumed by the invention of a meter, kept double-locked in an iron box, ingeniously registering every stroke of the machine. Attempts were continually made to plagiarise the engine or its principle of action; but Bolton & Watt, by invention or otherwise, successfully protected the right.

Watt's steam-engine now gave an impetus to mining. He wished to apply it to many other purposes, especially navigation, but had enough to do in introducing it gradually into pits. New mines were opened; old ones, full of water, rubbish, and closed, were again put in operation. But the active mind of Watt was not content with applying the engine merely as a pump for draining mines, he restlessly wished to make it subservient to other purposes. He effected this by that most graceful and beautiful invention, the sight of which in operation produces a feeling of pleasure, like that derived from contemplating a fine work of art,—*the parallel motion.* At the end of the beam of a steam-engine may be seen a curious contrivance or parallelogram, with the pis-

ton-rod attrched to one of its angles or elbows. When the engine is in action, it will be observed that, while three of the angles move in small circular arcs. the fourth is so pulled upon by opposite forces, that, although tending to move in a curve, it strangely moves in a straight line. This result, though simple, depends upon a curious mathematical principle.

Mr. Watt's next improvement was the *double-acting engine* ; and, afterwards the means of *shutting off the steam* from the boiler. This he did not fully complete, but it has been since done by other artists, by which a bushel of coal has been made to perform the labor of 20 men, equivalent to performing a man's daily labor at the cost of a halfpenny.

Watt had thus increased power. Power, however, is not the only element of success in the labors of industry. Regularity of action is of no less importance. The coal is of unequal quality ; the workmen are often far from intelligent, and frequently inattentive. Of course the propelling steam would be sometimes superabundant, sometimes sparse, and rush sometimes with less and sometimes with more rapidity into the cylinder, occasioning great irregularities of movement. Watt's genius provided a remedy for this remissness of operatives, by an ingenious application of an apparatus called *the governor*, or revolving bells. You, Frederic, no doubt, when looking at an engine, considered them only at first as a pretty toy ; but such is the efficacy of this ap-

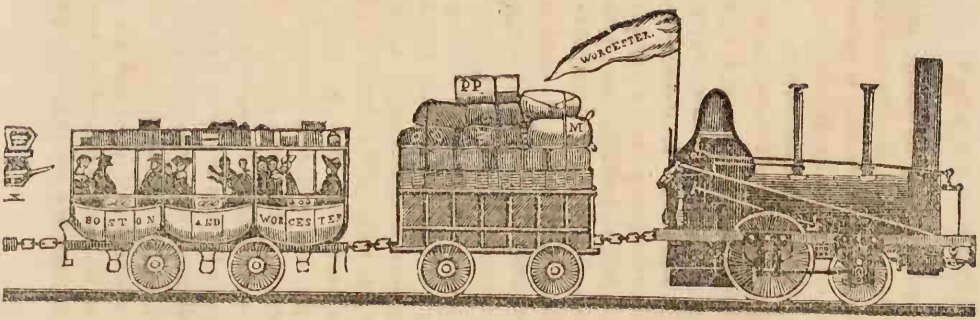
paratus, that, by its means, a steam-engine may be made to give motion to a clock which shall keep good time. It is this regulator which confers on Watt's steam-engine, applied to any purpose or art, a working movement that is wholly free from irregularity, and by which it can weave the most delicate fabrics, as well as communicate a gigantic movement to the ponderous stones of a mill, however massive.

If I undertook to describe all the other inventions of a minor kind, which came from the prolific genius of Watt, it would require weeks instead of an evening. I intended to tell you about his youth and his steam-engine in brief terms. He invented it, and took his patent in 1760, before he was 24 years old ; if his pursuits were uncommon, and such as are not usually followed by boys, yet boys like variety, and his acquisitions command universal admiration for their novelty. Young Watt played as joyfully with syllogisms as other boys at fives or cricket. All juvenile sports originated from ancient martial exercises, games, races, popular speaking, and skill of the head as well as the hand ; and young Watt was pleasantly engaged in the last named sports. For want of funds and popularity, his engine, which now gives almost perpetual motion to all labor, and as it were a half-miraculous power to man,—stood idle for 14 years. It does not follow that his fruitful brain was all this time idle. His whole life was prolific of inventions, as well as in labor as an engineer and surveyor.

Steam navigation, railway travelling, automaton factory labor, steam printing, mining, and hundreds or thousands of other arts have been brought to their present state only by means of Watt's discoveries. Steamboats were perfected on the Hudson river, New York, by R. Fulton, a native of Pennsylvania, in 1807.

The steam-power, employed in 1844, in England alone, was equal to *eight millions of men's power*, or 1,600,000 of horse-power. It requires eight times the quantity of soil for producing food for a horse that it does for a man ; 1,600,000 horses, therefore, require as much soil or food as 12,000,000 of men. The United States in 1851 have an equal quantity of Watt's steam-power in operation for manufactures and railways ; all the countries of the world have adopted or will soon use them. Almost all the luxuries and comforts of life, all the refinements of social existence, may be traced to machinery, aided directly or indirectly by steam. Machinery is the result of experiment, experience, and a study of the working principles of nature, which are hidden from superficial observers. Every day some new application of steam is diminishing the amount of human drudgery. This study of nature forms a never-failing source of intellectual enjoyment, and proves by its effects that ' knowledge is power.'

Watt was the inventor of machines for copying letters ; the plan for heating houses by steam ; the instrument for multiplying copies of busts and sculp-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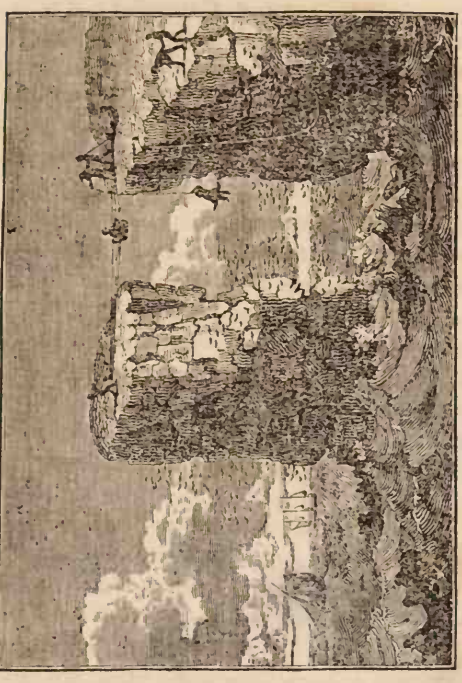
ture ; and was connected, more than any other person, with that grand chemical discovery, *the composition of water*, which was formerly supposed to be a simple element, but is a compound of two gases, or airy fluids, formerly unknown.

Mr. Watt withdrew from business in the year 1800, but lived 20 years longer among his friends—and died in 1819. Sir Walter Scott says of him, ' It was only once my fortune to meet Watt, when there were assembled about a half a score of our northern lights. Amidst this company stood Mr. Watt, the man whose genius discovered the means of multiplying our national resources to a degree perhaps even beyond his own stupendous powers of calculation and combination ; bringing the treasures of the abyss to the summit of the earth— giving to the feeble arm of man the momentum of an Afrite—commanding manufactures to arise—affording means of dispensing with that time and tide which wait for no man—and of sailing without that wind which defied the commands and threats of Xerxes himself. This potent commander of the elements—this abridger of time and space—this magician whose cloudy machinery has produced a change in the world, the effects of which, extraordinary as they are, are perhaps only beginning to be felt—was not only the most profound man of science, the most successful combiner of powers, and calculator of numbers, as adapted to practical purposes—was not only one of the most general-

ly well-informed, but one of the best and kindest of human beings. There he stood, surrounded by the little band of northern literati. In his 81st year, the alert, the kind, benevolent old man, had his attention at every-one's question, his information at every-one's command. His talents and fancy overflowed on every subject. One gentleman was a deep philologist—he talked with him on the origin of the alphabet, as if he had been coeval with Cadmus; another, a celebrated critic — you would have said that the old man had studied political economy and belles-lettres all his life; of science it is only necessary to speak—it was his own distinguished walk.'

IN CONTINUATION.

Whilst I was in Scotland, said Mr. Selby, I had an opportunity of visiting some of the rugged neighboring islands of Orkney and the still more distant Shetland isles, 86 in number, part of which are inhabited. On some of these coasts, the people subsist on sea-fowl and their eggs, whilst the down and feathers are a source of great profit. In some places wide fragments of rocks have been cut off from the main land by convulsions of nature or the washing of the sea. On these spots immense flocks of sea-birds securely built their nests, till some bold invaders found means of crossing these dreadful abysses



by cradles passing on ropes. One of these is at the Noss of Brassah, which is 100 feet from the adjacent land and 300 feet of perpendicular rock above the sea. The tops of the rocks on each side of the cleft or fissure have two stakes festened in each of them; to these are ropes tied, and upon them is hung an

article which they call a cradle ; in this a man moves himself from the higher rock on the main land to the lesser rock opposite, where he secures as many fowl or eggs as he wishes. To return, however, is a more difficult task, because it is an ascending or up-hill course, and his cradle is loaded with game ; but this difficulty is overcome by a spare rope attached to the cradle and held by people on the main land, who drag him back. To reach the clefts between these precipices and the sea, a more dangerous method is resorted to, of tying a rope round a man's middle, and lowering him in a basket, which he fills with eggs and birds, and is then drawn up from the abyss.

At St Kilda, another small island, the inhabitants trust more to their own steadiness of head, strength of muscle, and daring spirit, to ensure success. They are accustomed from infancy to climbing, and drop from crag to crag almost as sure-footed as so many goats, or the birds themselves. Practice makes perfect, and they have been so long habituated to bird-catching as a means of livelihood and profit, that they follow their vocation to frightful lengths. They depend upon ropes of two kinds, one made of hides, and the other of cows' tails, all of the same thickness. The former are the strongest, and are less liable to wear away, or be cut, by rubbing against the sharp edges of rocks. These ropes are from 90 to 200 feet in length, and about three inches in cir-

cumference. Those of hide are made of cows and sheep's hide mixed together. The sheep's hide, after being cut into narrow strips, is plaited over with wider slips of cow's hide. Two of these are then twisted together. So valued are these ropes, when rightly made, that one of them forms a marriage-portion of a St. Kilda girl; and, to this secluded people, whose lives and all their comforts often depend on the strength of this article, it is of more value than gold and jewels. The favorite resort for birds is the tremendous precipice of Fulmars, 1300 feet in height, supposed to be the loftiest face of precipitous rock in Britain. To these precipices, to look down which produces giddiness and fainting with strangers, men and boys resort for birds' eggs, gulls and other fowl.

Many of these bird-catchers go on these expeditions alone, without any one to hold the rope or assist them; an instance is related by Mr. Stanley. 'It was on such a solitary excursion, that a man, having fastened his rope to a stake on the top, let himself down far below; and in his ardor for collecting birds and eggs, followed the course of a ledge, beneath a mass of overhanging rock. Unfortunately he had omitted to take the usual precaution of tying the rope round his body, but held it carelessly in his hand; when, in a luckless moment, whilst he was busily engaged in pillaging a bird's nest, it fell from his grasp, and, after swinging backwards and forwards three or four times, without coming within

reach, it at last became stationary over the ledge of the projecting rock, leaving the bird-catcher apparently without a chance of escape,—for to ascend the precipice without a rope was impossible, and none were near to hear his cries, or afford him help. What was to be done ? Death stared him in the face. After a few minutes' pause, he made up his mind. By a desperate leap, he might regain the rope, but if he failed, and at the distance at which it hung, the chances were against him, his fate was certain, amidst the pointed crags ready to receive him, over which the waves were dashing far, far below. Collecting therefore all his strength, with outstretched arms, he sprang from the rock, and lived to tell the tale,—for the rope was caught !'

On my return from Scotland to England, among other places I visited Plymouth. About fourteen miles from this port, and ten from Ramhead, are the Eddystone rocks, on which a lighthouse is built. It was perhaps in some degree the model after which the lighthouse on Minot's Ledge, in Boston harbor, was reared. The Eddystone lighthouse is exposed to the swells of the Bay of Biscay and the Atlantic ocean, whose waves often break upon it forty feet in height, even in moderate weather. It was supposed an impossibility to work, or even land upon these rocks ; yet, in 1696, it was undertaken by Henry Winstanly, Esq. of Littlebury. He comple-

ted it in 1700, after four years labor, and was so certain of its strength, that he declared it to be his wish to be in it "during the greatest storm that ever blew." His wish was amply gratified; for, on the 26th of November, 1703, whilst he and his workmen

and the lighthouse keepers were there, a tremendous storm devastated all Great Britain. The next morning, when the storm abated, assistance was sent at great risk ; but nothing was found standing, the sea breaking over the rocks where it had stood, some stumps of heavy iron, rivetted in the rocks only remaining ; nor were any of the people, nor any of the materials of the building, ever found.

In 1709 another structure was built, which braved the elements till 1755, when it was burnt.

Mr. Smeaton was appointed to erect the present Eddystone lighthouse, which he finished, and it was occupied and lighted, 1759. He built it of stone, enlarged the base, without increasing the size of the waist or the solid part above. Its iron roots lie hid below. The rock, which slopes south-west, is cut into horizontal steps into which Portland stone and granite are dovetailed, and united by cement. To the height of 35 feet, it is a solid mass of stones ingrafted into each other, and united by every means of additional strength. The lighthouse has four rooms, one above the other ; over these, a gallery and lantern. It is 80 feet high, and, though it has received the assaults of the elements for 93 years, still braves their fury.

' Our Minot Ledge lighthouse lately met a similar fate with that of the first Eddystone,' said Lucy.

Yes, but in the Eddystone lighthouse 20 persons were lost, two only were drowned at Minot's ledge.

MR. SELBY'S THIRD VISIT.

At Mr. Selby's third visit, the family were settled at their happy fireside, and he said he would relate what befel him in Africa.

Mr. and Mrs. Johnson said nothing could give them more pleasure, for they were as anxious as their children to learn every particular concerning their friend, during so long an absence.

You will recollect I sailed from Sicily, after ascending Mount Etna, with the intention of proceeding to India ; but, alas, it was long, and my sufferings were great, before I arrived there ; for, after we had safely passed round the western side of Africa, a dreadful storm arose, and our ship became so leaky, that all our endeavors to save it were ineffectual. About midnight, another extensive leak filled the vessel so fast with water, that we knew she must sink ; and, as a last resource, all who were upon the deck clung to the masts, or any loose piece of wood they could seize ; I laid hold of a plank, which I grasped in an agony I cannot describe.

We had no time to assist those who were below deck, for in an instant the ship sunk down, and I have no recollection of what further happened, until I felt myself violently thrown upon the beach by the force of the waves, on which the plank I held had

floated. The shock I received was so great, that I soon fell again into a state of insensibility, from which I did not recover until the morning light showed me the dreadful loss I had sustained.

I looked around, and found myself alone; not one of my fellow voyagers had escaped. The sea was nearly calm, and not the smallest vestige marked the spot where our vessel had sunk. I reflected on the melancholy scene I had witnessed; and the acute feeling I experienced, from thus being separated from all companions and friends, was greater than I can express; but soon the consideration that the God who had, through life, sustained and now most won-

derfully preserved me, could still provide me with subsistence, cheered my drooping spirits. With a firm reliance upon his goodness and power, and with a thankful heart for the blessing of preservation, I rose to endeavor to seek some habitation where I might obtain relief. I was very weak, and found it a most painful effort to walk ; but I knew that on this exertion my life depended. Fortunately, I had a large clasp-knife in my pocket, and with it I cut down a branch of a tree, which, serving me as a cane, greatly assisted my feeble limbs. I dragged on a long, long way, but saw no human dwelling.

The sun was beginning to sink, and my spirits sunk with it ; what will become of me, thought I, if the darkness of night should prevent my proceeding ; I must then perish with hunger, for I felt so weak, that I was certain I could not long survive.

Worn out with walking, I sat down under a tree, and gazed on the setting sun ; but, what was my joy, on turning from that object, to perceive, at a little distance, a negro woman coming towards me ! I crawled to meet her ; she looked at me with pity, and bade me, in the negro language, which I happily understood, to follow her. I did so, and we soon arrived at a hut, so covered with trees, that I had not before discovered it. I entered with her, and saw two other women, spinning cotton.

I told them all I had suffered, and, when they heard how long I had been without food, one of the

women went out, and soon returned with a very fine fish, which she presently broiled, and gave me to eat. They then kindly spread a mat for me on the floor, on which I laid down ; and, when they thought me aleep, they began to sing. I listened to their voices, which were sweet, and I soon found that I was the subject of their song ; the music of it was very plaintive, and the words I shall never forget. " The poor white man, faint and weary, came and sat under our tree. He has no mother to bring him milk ; no wife to grind his corn : let us pity the white man ; no mother has he."

The kindness of these poor, but friendly negroes, delighted and affected me. In the morning, I cut off the buttons of my coat, as a parting gift ; these were all I had to offer. In return, they gave me a small bag filled with provisions, showed me the road I must take to arrive at an European settlement, and assured me they would offer up prayers for my safety.

When I left them, my tears, rather than my words expressed my gratitude. On my way, I reflected on the kind providence of God, who, at the very moment I was dreading I should perish with want, sent this benevolent negro to pity and relieve my distress

IN CONTINUATION.

I travelled, continued Mr. Selby, until the day was far spent, when I was suddenly startled by the report of a gun. I looked round, but could perceive no one : however, as the sound somewhat alarmed me, I thought it best to climb a high tree, that was near, from whence I might, myself unseen, discern the cause of the firing. I now saw, at a great distance, a party of black men firing at a lion, who was already wounded, and lying upon the sand. He appeared a very large and fierce animal ; and I was afterwards told that the blacks, having once wounded him, had hopes that they might be able to take him alive, convey him to a distance, and sell him to the Europeans, who would be glad of such a prize to send into their own country.

With this view they consulted together what was best to be done, and one of them proposed taking off the roof of a hut, (which in their country could easily be done, as the roofs are small, of a circular form, and simply made of a frame-work of bamboos, covered with thatch,) and throwing this roof over the lion, while he appeared in so helpless a state, and then securely bind him with ropes.

This invention was very much approved ; and I saw them go to a neighboring hut, strip off the

thatch, and lift up the bamboo frame upon their shoulders ; but, before they had returned, the lion had recovered his strength, and looked at them so fiercely, that they dared not approach him ; and, to protect themselves, were about to let the roof fall upon their own heads ; when, alas ! the lion made a violent spring, just at the moment the roof was

lowered, and both the beast and his pursuers were enclosed in one fatal cage ! I heard their screams with unutterable anguish ; for it was entirely out of my power to assist them. I could only hasten from the dreadful scene, reflecting with horror on the dismal end of these poor negroes. The African lion is very large and powerful, yet he is hunted by the negroes and the Moors, who tyrannize over the negroes in some distant district. Whilst commiserating with them, I forgot the pain of my own sufferings, though my feet were sore with walking on the heated sand, and my body was covered with blisters from the extreme heat of the sun.

Presently I was surprised to hear some one call to me in English ; I turned and saw a negro, dressed lightly, in European fashion. He told me he had left his native country when a boy ; and, after living several years in England, was now returning to his African friends. Observing my dress, he conjectured I was a person in distress, as this was not a part of the coast for strangers to land upon.

I told him his supposition was right, for only the day before I had suffered shipwreck, and I related to him all the sad particulars. The compassionate negro felt for my destitute condition ; he said, he would take me with him to his friends that night, and set me forward, in a right direction, the next morning. We turned into a little wood, at the farther end of which was a village.

'There,' cried the black, joy sparkling in his eyes, 'there is my native village.' So saying, he began to play a lively air on a fife, somewhat resembling a flute, the sound of which brought out all the villagers; and, as his return had been expected, he was soon surrounded by his joyful relatives, and almost smothered with the affectionate embraces of his brothers and sisters. His mother was an aged woman and blind, and was led forth, leaning on a staff; every one made way for her, and she stretched out her hand to bless and welcome her son: she stroked his face and hands with tenderness, frequently declaring her latter days were blessed by his return, and her ears cheered with the sound of his voice.

I sat down, unnoticed, in a corner, enjoying the sight of their meeting: at length, the traveller turned to look for me. He informed his friends who I was, and for his sake they received me with kindness, but with great astonishment, inclining to fear. They had never seen a white man before: when I moved, the women retreated a step, and the children scampered off in great affright. However, as they saw I was perfectly harmless, by degrees they became reconciled to my appearance, and cordially seated me at their friendly supper.

In the morning, I went with my host to a neighboring hut. This was a curious habitation—for it was so low, that we had to creep in at the entrance on our hands and knees; and the furniture and peo-

ple were crowded together like things in a closet. In the hut was an old man, two young women, and several children. The women and children were so alarmed at the appearance of a white man, that they edged along softly to the entrance, and then dashed out with the swiftness of greyhounds.

As we returned, I saw some people gathering the fruit of the lotus, which they call tomborrongs. These they dry, beat small, mix with water into a paste, and form into cakes, which, when baked by the heat of the sun, taste exactly like the finest gingerbread.

The following, or third morning, I felt recruited, and, the blacks having filled a bag with provisions for me, and given me the necessary directions for keeping the right road, followed by the good wishes of this poor but happy family, I again set out on my cheerless journey.

IN CONTINUATION.

When I had travelled many miles, said Mr Selby, I was overtaken and stopped by a party of Moors on horseback. I dreaded the consequence of this meeting; for the Moors, who here inhabit the same country as the negroes, are of a very different disposition, being gloomy and cruel. They insisted on my going with them, and I had no power of resisting. But, as they talked of carrying me be-

fore their king, I had hopes he would be merciful, and aid me in returning to my own country : but in this I was grievously disappointed—their Chief received me with a stern and savage look. He was seated in a large tent, surrounded by a great number of blacks. They were all much amazed at my dress ; and some time was occupied in buttoning and unbuttoning my waistcoat.

The Moors entertain great hatred to supposed Europeans ; and, when I was conveyed to a hut for the night, I found it was surrounded with guards. Here they brought me a little boiled rice, and some milk. The night was sultry ; and my spirits were so depressed, I found it impossible to sleep. At midnight the door of my hut was slowly opened ; I was greatly alarmed ; but my fears were soon dissipated, when, by the light of the moon, I saw a negro, whom I had noticed observing me in the chief's tent with looks of great compassion. He told me he was come to enable me to make my escape ; for he knew the Moors were ill inclined towards me, and no time was to be lost—the present was the only moment. To-morrow I might be led to execution ! He showed me four Moors asleep at the door of my hut,—' Over these you must step softly,' said he ; ' if one awake, your life and mine must pay the forfeit.'

I silently did as the friendly negro directed : we passed the Moors safely, and stopped not until we were beyond the town. I would then have thanked

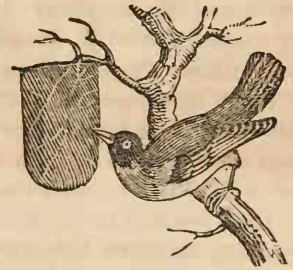
my guide, but he said. ‘ I must hasten, or I may be missed,’ and ran off too quickly for reply ; I could only pray that the blessing of God might follow and reward him. I then made haste to reach the desert, that I might hide myself in case of pursuit. The events of the last twenty-four hours appeared to me like a dream ; but I had no time for dwelling on reflection. I hurried on, until the heat of noon made me ready to faint. In the hope of seeing some distant hut or village, I climbed a high tree : the view only extended over vast thickets of underwood, and hillocks of white sand, peopled here and there with termite ants, and the groves with birds of prey or their victims the gregarious or granivorous tribes, that is, my dears, feathered songsters who live principally on seeds, and flock together at particular seasons : not one human habitation appeared in view. The birds, though beautiful, appeared unlike ours, and the animals suited only to these parched soils. The climate seemed an unfit abode for white men, and intended by nature only for its swarthy occupants.

Obliged to keep travelling, or perish in the desert, I dragged my aching limbs along, until evening, when suddenly a black cloud darkened the sky, and flashes of lightning gave hopes of rain : rain—which, in my present state, would have been such a relief ! Expecting the shower, I opened my mouth to catch the refreshing drops, having no other means; but in an instant, I was covered with a cloud of

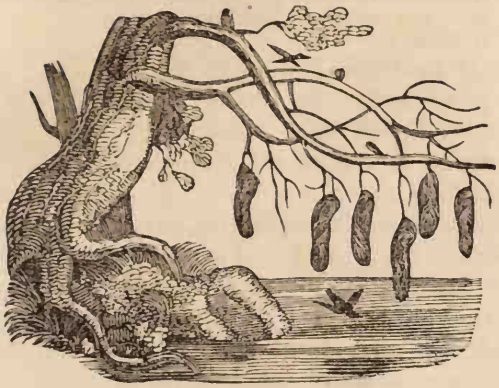
hot white sand, driven with so much force by the wind, as to give no small pain to my face and limbs.

The sand continued to fly, in amazing quantities, for about an hour ; during which I was obliged to sit, and sometimes lie prostrate under the shelter of a bank or hillock, to prevent myself from being suffocated. After this, however, I again saw the lightning flash, and soon I felt the heavy drops on my face. As my clothes wetted, I sucked them, and thus relieved my thirst. Presently I heard the croaking of frogs, which convinced me that water was near : I followed the sound, and came to a pond, where the frogs were so numerous and so tame, that it was somewhat difficult to perceive the water, more so to drink. Here I resolved to spend the remainder of the night,—being too much fatigued to proceed ; but, fearing I might fall asleep, in a situation where wild beasts or wild Moors might attack me, I climbed up into a tree, and, fastening myself by my clothes, as well as I could, endeavored to sleep. In the morning, I awoke much refreshed, pleased and enlivened by the songs of numerous birds, who build their nests on the banks of a solitary river, not far distant. What was my joy, on awaking, to find the tree I had climbed, a date-tree ! My heart swelled with gratitude to the Almighty, for thus furnishing me so unexpectedly with food. After satisfying myself, I filled my pockets with dates, descended the tree, and once more resumed my perilous journey.

Some of the African birds are a curiosity. Volumes might be filled in describing them. I will only say a word about two or three of the herding or sociable kind, called the Pensile Grosbeak, who hang their nests like our red-winged oriole, which you have admired ; but the grosbeak does it in a different



manner, attaching nest under nest, knotted, double-knotted, and quadrupled to a single bough at top. This innocent bird has to guard against snakes, white ants, monkeys, birds of prey, insects, reptiles, and perhaps juvenile offenders. It is about the size of a sparrow, and makes her nest of grass, straw, wild flax and reeds, in the comical shape of what may vulgarly be called a pudding-bag ; with the entrance below, while it is fastened above to the twigs of trees growing over the water. On one side of this nest, within, is the true nest. These birds do not destroy the old nest every year, but suspend a new one to



the lower end, and as many as five nests may be seen hanging one under another. Five or six hundred such nests have been sometimes observed, crowded upon some single undisturbed favorite tree, branching over a deep river, or inaccessible precipice, looking like so many millers' well-filled meal-sacks, tied at top, and suspended by hair or strong woven thread, or long strong spear grass, the manufacture of this skilful little bird. A single nest is from ten to fifteen inches in length ; of course you may conceive the length of five or six of these tree-rocked cradles, joined together, swinging over the water, or perpendicular ledge, each of them 30 or 40 feet long.

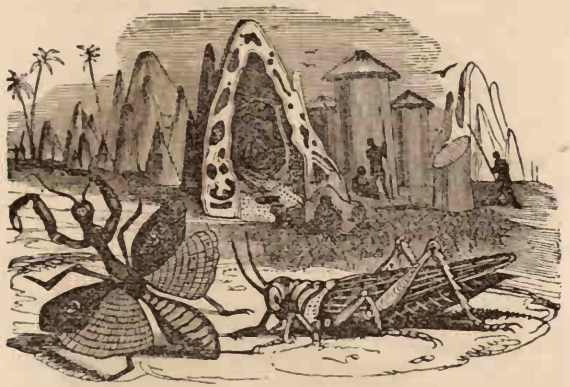
Shakspeare said of a castle at Dunsinane, where martins built their nests,

> Heaven's breath smells wooingly here : Where they
> Most breed and haunt, I have observ'd, the air
> Is delicate :—

but all the Grosbeak needs, in this wilderness, is a twig, slender but firm, to hang his loop upon ; and he, with his little bill alone, erects his own nursery-room. In the words of William's picture-book, ' When the wind blows the cradle will rock ;' the careful and considerate parent birds, however, have taken precautions that all the boughs and bow-lines are in good order and condition ; that the ' bough shall never break,' nor their cradle ever ' fall.' I have seen twenty or more of such strange but beautiful nests, or long round sacks, hanging from a single tree, oscillating gently like a pendulum when the weather was calm, or swinging violently in high winds and horrible sand storms ; the little innocent nestlings within the nest lying quiet and unharmed, always safely outriding every tempest, and perhaps enjoying their rough but healthy game of rocking in their sort of baby-jumper. In some huge trees there are as many feathered songsters as in half a town in New England, where, for the benefit and growth of cankerworms, useful birds are wantonly exterminated.

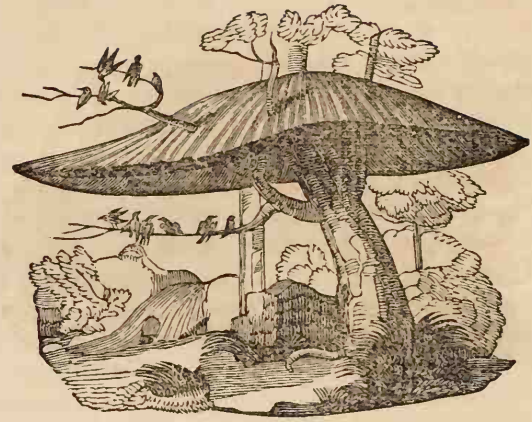
' How do all these birds find food to eat ?' said Lucy.

In this warm climate, wherever there is moisture, vegetation is rapid, and insects not only multiply, but are of great size. An ant-hill is often 8 or 10 feet high, and flocks of locusts are sometimes many miles wide and 100 feet high, and many hours in passing.



These little birds destroy the smaller insects and the eggs of the larger ones ; birds of prey destroy these songsters, but they also devour snakes and other noxious reptiles, crocodile's eggs, and young animals. It is a land of violence, deserts, and fruitful spots.

But the Sociable Grosbeak, another species of these birds, which inhabits the same warm regions of Africa, seems to excel the Pensile Grosbeak, in the extent if not in the skill of its workmanship. The industry of this bird is almost equal to that of the bee. Each individual nest is about three or four inches in diameter ; but, as a colony of these nests are all in contact with one another around the eaves of this umbrella-looking structure, they appear to the eye to form one building, and are distinguishable



from each other only by a little external aperture, which serves as an entrance to the nest ; and even this is sometimes common to three different nests, one of which is at the bottom and two at the top. The number of cells, increasing in proportion to the increase of inhabitants, the old cells become streets of communication, the whole formed as it were by line and level, with mathematical precision. As this republic of birds increases, the number of cells must increase under this wide-spreading canopy of their own ingenious construction, divided and subdivided into other streets, avenues, or sleeping-rooms.

' How did these little Grosbeaks learn to tie knots and make umbrellas ?' said William.

I am relating facts only, said Mr. Selby. You know the republic of United America is divided into 34 independent States, under a general government ; in some such silent way, although living under no writ ten compact, a little nation of Grosbeak birds, associated under this broad overhanging canopy or umbrella of their own staple, fabric, and commodity, appear also to enjoy exclusive family or state rights and privileges, each carrying on the art and faculty of hatching eggs, probably under municipal regulations, their language being to us unknown.

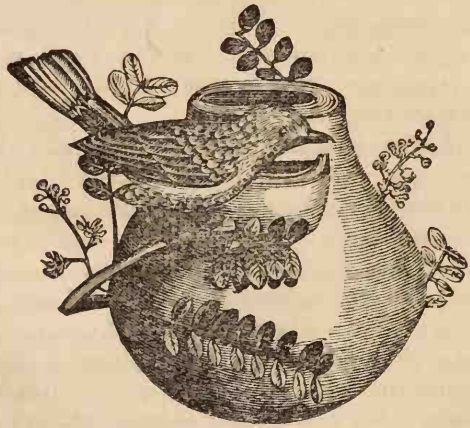
Dr. Freyer says in his Travels, " The large nest, that I examined, was the biggest I saw in the course of my journey, containing three hundred and twenty inhabited cells, which, supposing a male and female to each, would form a society of six hundred and forty individuals ; but, among this species of birds, there is only one male to many females, who are much more numerous."

Mr. Addison asks the question, ' What can we call the principle, which directs every different kind of bird to observe a particular plan in the structure of its nest, and directs all the same species to work after the same model ! It cannot be imitation ; for though you hatch a crow under a hen, and never let it see any of its works of its own kind, the nest it makes shall be the same, to the laying of a stick, with all the other birds of the same species. It cannot be reason ; for, were animals endowed with it to as

great a degree as man, their buildings would be as different as ours.'

It is so with the Grosbeak. Its nests, and those of other birds in this country, and the birds themselves in Africa and Asia, are different from ours, yet all their habits, natural or acquired, are appropriate to their wants, climate, protection, and subsistence, and excited my wonder and admiration.

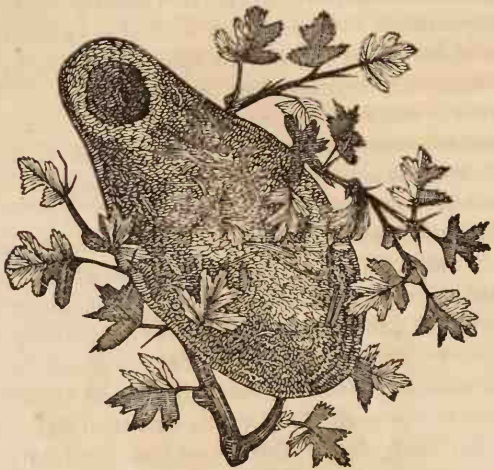
Another of these African birds places its nest in the thickest bushes, and makes it with a sort of wild cotton. The nest very much resembles a bottle with a narrow neck. On the outside of it is a pocket which serves as a place of lodging for the male. When the female has left the nest, the male, if he



desires to accompany her, beats violently with his wings against the sides of the neck of the nest, until the edges, by coming in close contact with each other, unite, and entirely close up the entrance. By means of this singular contrivance the young are protected from those voracious insects and animals, which might otherwise injure them during the absence of the parent birds.

Dr. Freyer adds to his account of the Sociable Grosbeak, that ' Nature, in the rainy season at Bombay, affords us a pleasant spectacle, as well as matter for admiration ; for here is a bird that is not only exquisitely curious in the artificial composure of its nest with grass, but furnished with devices and stratagems to secure itself and young ones from its deadly enemy, the squirrel ; as likewise from the injury of the weather, which, being unable to oppose, it eludes with this artifice ; namely, contriving the nest like a steeple-bee-hive, with winding meanders, before which hangs a pent-house for the rain to pass, tying it with so slender a thread to the bough of the tree, that the squirrel dare not venture his body, though his mouth water for the eggs, &c. within ; yet it is strong enough to bear the hanging habitation of the ingenious contriver, free from all the assaults of its antagonists, and all the accidents of gusts and storms. Hundreds of these pendulous nests may be seen on a single tree.'

Whilst I was in England, continued Mr. Selby, I



saw one bird, which had a very curiously-shaped nest. It is called Jack-in-the-bottle, from the circumstance of the nest having the shape of a bottle, composed of green mosses, &c. beautifully felted together, consisting both of tree, earth, and rock moss, caterpillars' webs, and woolly and cotton articles and feathers, with that order and art that the chief strength and texture of the walls were of a yellowish-green ; and the silk-hairy mosses, and tough threads resembling those filaments suspended in the air and flying up and down like spiders' webs, which are accounted a sign of fair weather, connected and interwoven or

entangled, so firmly together that they could hardly be plucked asunder. The interior on all sides and at the bottom was lined with feathers and down. The outside was fenced and strengthened with leafy moss firmly bound together ; the little hole at the neck of this bottle-nest seemed hardly big enough to admit the old bird.

' Our lark and goldfinch build their nests in the open pasture,' said Lucy.

Yes, many birds in our country, where they are in some degree safe compared with Africa, merely select a hole in a tree, bank, rock, or old wall, eaves or rafter of a barn, to build nests, which they line with soft warm substances. Others build on reeds, alders, hedges and briers ; some excavate holes in clay-banks, but all line them with feathers ; the night-hawk and whip-poor-will lay their two eggs on a bare rock among pebbles and pudding-stones, from which they are scarcely distinguishable.

The smaller tribes are more expert in making nests than those of a larger growth. Among others

the nest of the Tailor-Bird is very remarkable. It is constructed of one or two leaves, dexterously sewn together by a slender vegetable filament, or thread; and the interior is lined with cotton. The spoon-bill, a species of heron, builds on the earth; and the toucan, a large bird, with a disproportionate, shovel-

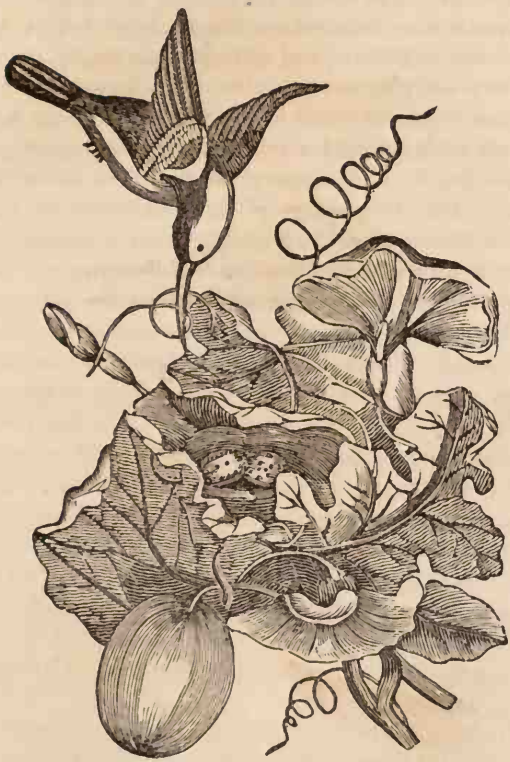
L

shaped bill, digs a hole in the sand, builds and lines it, and sits upon his nest, with his formidable head and beak at the opening, looking down all opposition. With a front, as striking and belligerent as that of the squire in Don Quixote, frowning at Sancho, he thus protects his long-billed little ones against intruders.

Even some of the African humming-birds are large, but all extremely beautiful.

'There is one, which comes to our garden, not much bigger than a butterfly,' said Lucy.

I believe there are nearly ninety kinds of humming-birds in America, yet only one kind visits the United States; and even he retreats further and further south towards tropical countries, as the flowers decrease or die. He is their living companion, or the presiding genius of flowers and fields, and, from his quickness of wing, seems absolutely wingless, so rapid is his motion. Our pretty visiter is called the Ruby-throated Humming-bird, the co-mate of spring blossoms, and commences his northern travels on the southern borders of the Union in March, flying probably in the night, as, from sunrise to sunset, he ap-



pears wholly engaged in feeding. A swallow flies rapidly and incessantly ; but this bird seems to give ten or twenty vibrations of the wing to the other's one.

Whilst poised in the air, he thrusts his tongue or proboscis into hundreds or thousands of flowers in a garden or parterre, and daily, perhaps hourly, visits hundreds of gardens and fields, where he appears so suddenly that he seems to have dropped from the clouds ; supporting himself on air, catching insects in the petals, and sipping honey, all at the same time. The blossoming of the peach-tree is the signal of its approach to New-England : some remain here to feast and rear families of Ruby-throats ; but many are birds of passage, who make a few calls upon blossoms at stopping-places, and then hurry further north. ' Full many a rose is born to blush unseen,' says the poet ; but our little Ruby-throat, if he understood our dialect, might doubt the assertion. Perhaps there is not a flower in the United States, and in the sunny south, from Brazil to the Artic pole, unvisited by this swift-winged bird. Wherever they go, there is no diffidence about them; they seem perfectly at home, fearless of man, regardless of their own race, their young ones excepted ; they will attack any other bird, and are seldom resisted, since their assaults seem rather to amuse than to irritate their larger neighbors.

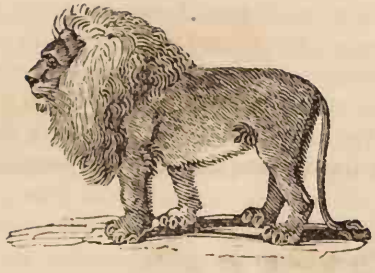
Nothing can be more brilliant than its plumage in a well-filled flower-garden, variegated colors in both setting off mutual beauty. The upper parts of this bird are green and gilded, changing every instant as it glances in the sun. Its throat is black like velve

in some lights, in others it resembles the ruby fiery red. It shows all its beauty to advantage, as it balances itself on its wings, and looks sharply into the flower. It inserts its long bill into the cup or capsule, and, with its double-tubed tongue, covered with a glutinous saliva, it draws out the insects from their shelter and swallows them : then it sips a little honey as if in payment of the service it has done the flower, and darts away with a motion too swift for the eye to follow. The small insects in the flower seem to be the object of its pursuit ; the honey is rather its luxury than its food. They sometimes light on twigs and branches, spending some time in arranging their dress, spreading their wing, and drawing the full length of each feather in succession through their bill. The nest of the humming-bird is one of the most ingenious pieces of architecture. It is generally on an old branch, but I have seen one on a young pear-tree. The bird collects from old fences a kind of moss in scales, which it glues together with saliva to form the covering of the nest, and give it a perfect resemblance to the bough on which it stands. The next coat consists of cottony substances, and the inner one of silk or down. When the bird is on the nest, the appearance of the whole establishment differs so little from that of the leaves and branches, that it easily escapes the eye. The nest is about an inch and a half wide, an inch deep, and is sometimes formed of gossamer, and the downy

substance from the mullein plant. The female lays two eggs which are of a pure white color. When any one approaches the nest, the little creatures dart around with a humming noise, within a few inches of a person's head. Small as it is, it has violent passions, and is very courageous, and sometimes a

little pugnacious in pulling flowers to pieces when they are without honey. When poised in the air, its wings look like a thin and golden mist.

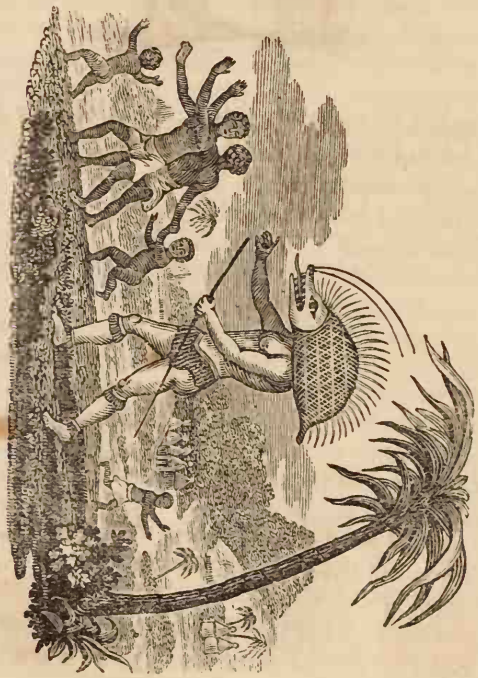
As I went along, I espied a large red lion, near a thicket, standing over an animal, which he had stricken down with a single blow from his powerful



paw. You may imagine that I was dreadfully afraid ; but, probably, he was already glutted with prey, for he suffered other animals and myself to quietly pass. I soon after arrived at a river, which several blacks were crossing on a curious bridge. This bridge was formed by bending down to the water's edge some of the tall trees, which grow on its banks opposite each other, and tying their extremities together with supple withes, and then laying across these trees several planks, or trees, on which people and their cattle can safely pass. Some of these negroes regarded me with compassion, and, after crossing the river, offered to conduct me to a town, to which themselves were going, and where, they assured me, I should be well received by a black who had lived in ' white man's country,' and held them in high respect.

I was truly glad to hear I was so near relief. Before night, we arrived at the town ; and I was taken

to the black woman's small house, built like houses in our country. She treated me with great kindness. She explained to me why the blacks, at the place of my shipwreck, were superstitiously afraid of white men. It was anciently believed by many tribes of negroes that white was the color of demons; and



their tyrants, the Moors, still keep up the delusion, in order to extort tribute. A Moor is whitewashed from head to foot; a porcupine-shaped basket placed on his head, calling himself the great Jumbo, or head of the imps, and, during night, visits the village or families he wishes to frighten into obedience. She gave me clean linen, and every refreshment of which I stood in need, and told me I was welcome to remain in her house until an English vessel should arrive at a neighboring port, where ships usually stopped to take in provisions.

It was not long before a vessel arrived, bound to India, whither I wished to go. I was, fortunately, known to the captain, and he enabled me amply to repay the black woman the value of what I had received. Her kindness I could only repay with gratitude.

As soon as the ship was ready, I went on board, and proceeded on the voyage.

OBSERVATIONS.

Mr. and Mrs. Johnson warmly thanked their friend for the pleasure his relation had afforded them; but the children felt sorry when Mr. Selby finished the recital of his African adventures. However, they anticipated with great delight the enjoy-

ment of some future evening, when they should again hear about foreign countries; and they felt grateful for the entertainment they had already received.

Both Frederic and Lucy wished extremely to ask several questions, about things Mr. Selby had mentioned, which they did not quite understand, but they felt afraid of being troublesome; and, for some time they sat silent,—till at last, Lucy, who remembered that her mother had often told her, it was right to desire explanation of what she did not understand, from some person older and wiser than herself, otherwise she would always remain as ignorant as if she had not heard the subject mentioned; and that nobody would consider such inquiries troublesome, if she only took care not to make them when she saw the person, to whom she applied, engaged either in reading, writing, or otherwise particularly employed; — Lucy recollected this, and, seeing her mother was not talking, begged, in rather a low voice, she would tell her something 'about *that* place Mr. Selby called a *desert*; and why there were no houses and people in it.'

The desert, my dear, replied Mrs. Johnson, is so called from its want of vegetation, occasioned by the extreme heat of the sun. A desert is a vast plain, like the common, where you often walk, only a great, very great deal larger; and, instead of grass, it is covered with sand, which becomes so heated, in this hot part of the world, that nothing can grow on it;

of course there are no inhabitants, and there is scarcely any water. In that part of Africa where Mr. Selby was, the sand is frequently so heated, that the naked foot cannot be set down without feeling much pain ; and even the negroes, who can constitutionally bear great heat from the sun, who are also natives, and can therefore bear this heat much better than Europeans brought up in a colder climate, yet even black men cannot walk on these sands without putting on shoes ; and then, in these deserts, hurricanes and violent storms of wind arise, driving before them or raising vast quantities of this hot sand into the air ; the effects of which, you have already heard Mr. Selby describe.

'But, mother,' interrupted Frederic, 'Mr. Selby mentioned thickets of underwood, — and you know he said he climbed a date-tree, and ate its dates ; and you just now told us nothing grew in the desert.'

If you had waited a little, my dear, I should have explained to you how that was. The interior, or middle of the desert, is entirely destitute of trees or plants ; but, towards the extremities or outer parts, as the air is not quite so hot, and water more plentiful, trees and shrubs are found, and the thickets of brushwood and tall grass, of which Mr. Shelby spoke, afford shelter to wild beasts, none of whom can live in the interior part of the desert. The camel is the only animal that can here endure the heat and want of water. To-morrow I may give you a

short account of the camel,—to-night I have no time, and it draws near your bed-time.

'But, if you please, mother,' said Frederic, 'tell me what Mr. Selby meant by European settlement; —don't yoo remember, he said he wished to reach a European settlement? I did not know what he meant, so I thought I would ask you, when he had finished telling his story.'

You are right in so doing, replied Mrs. Johnson. You already know that the world is divided into four parts or quarters, — Europe, Asia, Africa, and America. When a number of Englishmen, Frenchmen, Spaniards, or inhabitants of any European nation, leave their native land to live in some other country, wherever they fix their new abode (say in Africa) the houses they build, their language and manners differ from those of the native Africans, and they live separate from them in a town by themselves, which is called a European settlement. Do you understand this explanation?

Lucy and Frederic assured her they did.

William said, he should like to know what kind of fruit a date is? And why Mr. Selby said nothing about cocoa-nuts?

The date, my dear, is about the size of a walnut, of a very agreeable taste, and forms a considerable part of the food of inhabitants of warm countries, where fruit of all kinds is particularly refreshing. The leaves of the tree are very long,—some of them

are nine feet in length. Of these leaves are made baskets, bags, and palm-tree hats, this last article employing thousands of young girls in the western part of Massachusetts, New-Hampshire and Vermont, forming perhaps, as it were, a more reliable marriage-portion than that of the St. Kilda girls (see p. 99.) The tough fibres of the leaves are spun into ropes of considerable strength ; and, when the fruit is dried and pressed into bags braided from its own leaves it is a pleasant preserve sold at grocery stores. The wood, both of the stem and branches, is of great use in building ; and even the kernel of the nut, which is very hard, and shaped like a weaver's little shuttle or very large barley-corn, is ground in windmills and given to camels, when better food cannot be

procured. The leaves grow all at the top of the tree, forming a circle, which is very beautiful, somewhat like a gigantic green umbrella spread out.

The first bundle of palm-leaves sent to this country was received with a cargo of fruit by a Boston merchant, who is still living. Nobody knew what it was, nor what to do with it, but he, thinking it would make a handsomer and stronger hat than chip or straw for his own use, had one braided; since which playful occurrence, cargo after cargo have arrived in this country, and given industrious and lucrative employment to perhaps more girls than Lowell itself.

When dates are almost full grown or ripe, they are tied to the base of the nearest leaves, to prevent their being beaten and bruised by the wind. If meant to be preserved, they are gathered a little before they are ripe. When ripe, they are a delicious fruit. The date harvest is a time of as much anxiety beforehand, and of rejoicing when it comes, as the grain, potato, and cotton crops of this country. The owners of it do not depend wholly upon the new fruit, but, as this fruit cannot be kept fresh for any great length of time, they form a paste of it by pressing ripe dates into large baskets.

'What is the price of dates in Mecca?' is the first question which Arabs ask each other when they meet.

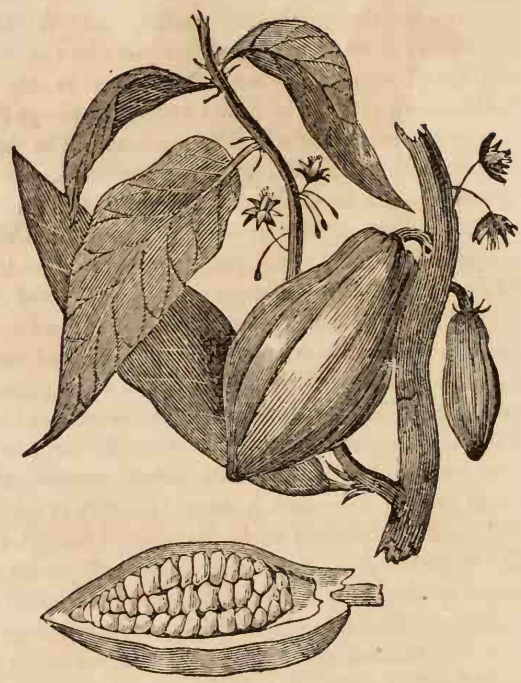
Ripe dates are also dried, on mats, in the sun. Those which are brought to this country are prepared in this way. Travellers in the desert perform

journeys of many hundred miles with no food but a little bag of dried dates.

'Now for the cocoa-nut, mother,' said William. 'Is the cocoa we had for breakfast just like the cocoa nut, that Frederic gave me, which was as big as half a dozen oranges or Jane's apple dumplings?'

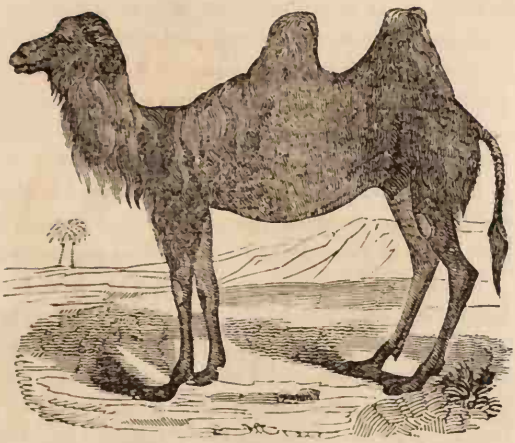
They grow on entirely different trees. The shells you drink for breakfast, the chocolate, and the cocoa beverage come from the same little nut, about as big as a hazel-nut. Shells are the bark of the nut. Cocoa is cracked nuts and shells pounded together and boiled for a time. Chocolate is pure cocoa, mixed and ground with some oily or fat ingredient into a heated paste at the chocolate mills in Dorchester, and mouldid into square or round shapes, in various gigantic pattypans. This cacao, cocoa, or chocolate tree looks like our cherry-tree, with a beautiful flower like a rose, but scentless; each half pod of cocoa contains about twenty nuts, each inclosed in a skin or shell; and grows in South America, Jamaica, Trinidad, &c. When picked from the pods, they are placed in heaps on platforms of clay, suffered to ferment for 48 hours, and then dried in the sun. A great consumption of chocolate takes place in Spain, where it is considered as a necessary of life; and in France it is fashioned into an endless variety of forms, flavored with vanilla, cinnamon, and other articles.

When intended for cocoa, the seeds are ground to



fine powder. The husks, or what is called shells boiled in milk, are in great esteem for invalids.

But we must not talk longer to-night. Good night. May God bless you, my dear children.



THE CAMEL.

THE next morning was exceedingly fine, and Mrs. Johnson told the children she would take her work, and sit in the garden, while they should rake and weed some of the flower-beds.

Lucy and Frederic were very good gardeners, they had always assisted their mother : on summer mornings they rose early, and dressed the flower-beds before breakfast,—tying the plants that needed support to neat white sticks, and keeping the beds so nice, that not a weed was to be seen. In autumn they picked up all the withered leaves and branches that

fell upon the beds and gravel-walks. Many people used to speak of the neatness of Mrs. Johnson's garden, and then she felt much pleasure in telling them it was owing to her own children's care, while they were delighted with their mother's approbation.

In spring, Mr. Johnson himself assisted in digging the garden, as Frederic and Lucy had not strength to do it properly; and, at such times, he showed them how to plant all kinds of seeds, and instructed them how to raise delicate plants and vegetables.

While Mrs. Johnson was putting on her bonnet, Lucy stood on tiptoe at her ear, saying, 'The camel.'

Ah that is true, my dear, I promised to say something of the camel, and I will be as good as my word. Go into the summerhouse, and I will follow you. In the mean time you can there take leave of your father, before he goes on his daily round of business. The children thanked their good mother, and ran off as fast as possible. Mrs. Johnson soon followed; and, when seated in the garden-chair, beneath the shade of a large beech-tree, she began:

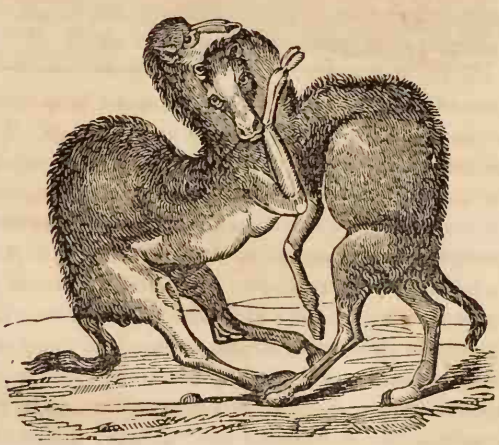
The camel is the most valuable of all animals in that part of the world it inhabits. It is the only animal that can endure the extreme heat and want of water, in the dry and burning sands of Africa and Asia. Although the form of the camel appear clumsy, it is most admirably adapted, both for its own comfort and for rendering it useful to man. Its feet are covered with a strong, thick, loose skin, which

easily gives way to any roughness on the road, and equally prevents the foot from being injured by the heat of the sand. Its usefulness was apparent to man in the earliest times. Abraham had flocks of camels, oxen, asses, and sheep ; and David built Jesalem before horses were generally known. Camels

formed their riches. The camel has a large bag, or stomach, as it is called, in which it stores a quantity of water, sufficient to prevent the necessity of drinking for several days. It sometimes happens that, when travellers cannot find water in the desert and are almost dying for want of it, they are obliged to kill a camel, and save their own lives with the water contained in the animal's stomach. The hunches on its back, and its great strength, enable it to carry much greater burdens than the horse. It kneels to be loaded and unloaded, which is a convenience, as its great height would otherwise render it very awkward to

fasten any burden upon its back. The camel is so patient and docile, that it will do anything, if well treated ; but, if beaten or ill treated it rages violently, and will, in its fury, tear its master to pieces, if he unfortunately come in its way during the continuance of its virago humor.

These fits of rage, in this usually gentle and useful animal, like those which also characterize the elephant, are periodical ; and dissipated or sporting Turks, whose countries it chiefly inhabits, take advantage of this propensity and have extensive camel fights, where they wager on the victory of one poor beast over another, a cruel and disgraceful amuse-

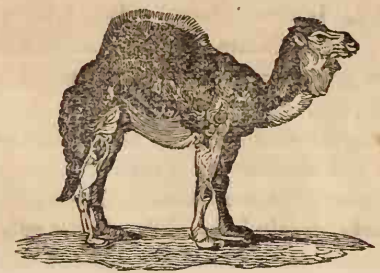


ment. ' Dog, however, will not eat dog ;' and camels, even in these periodical fits of rage, will not fight friendly camels ; the sporting Turks therefore bring two strange camels against each other on these occasions, who run at each other with the utmost fury, and the whole battle is as frightful as the onset, although it seems to be a source of much morbid gratification to the crowd of noisy spectators. Such exhibitions are the disgrace of the vulgar—whether they are the high or the low vulgar—of all countries ; and the lion-fights of the savage Romans, the bull-fights of Spain, the badger and bull-baitings and cock-fights of England, and the camel-fights and quail-fights of Asia-Minor, are equally indications of a barbarian spirit, which can only be eradicated by knowledge, humanity, and pure christian principle.

Of these, however, the camel-fights appear the least objectionable. The camels of Smyrna are led out to a large plain, filled with eager crowds. They are muzzled, to prevent their being seriously injured, for their bite is tremendous — always bringing a piece out. An enclosure is made, and two camels, muzzled, are driven in, and by various means incited to fight with each other. Their mode of combat is curious : they knock their heads together, twist their long necks, and seem to direct their chief attention to the throwing of their adversary. During the combat, the Turks, deeply interested, will not only back some one camel, some the other, but will clap their

hands, and cry out the names of their respective favorites, just as our amateurs do with their dogs, or the Spaniards with their bulls at the bull-fights, will echo the name of the hardy bull or the matador, that murders him.

The camel resembles the ass in being content with the poorest food : it even prefers prickly and thorny plants to softer vegetables, and yet, like the cow, this animal yields excellent milk. The camel forms the wealth of the Arab, or inhabitant of Arabia in Asia ; for its milk is the support of almost every Arab family ; and the flesh of the young camel affords much nourishment. You know the patriarch Job had 3000 camels 7000 sheep, and 500 she-asses, who also furnish rich milk. These were better riches than gold and silver. Its hair is much finer than sheep's wool, and it is woven into various articles of ornament and furniture. The fine hair pencils, which Lucy used in drawing the young larks, were made of



camel's hair ; even the manure is useful—for, in the deserts, where wood is as scarce as water, the manure, mixed with straw, serves the Arab for firing —burning with a strong, clear flame.

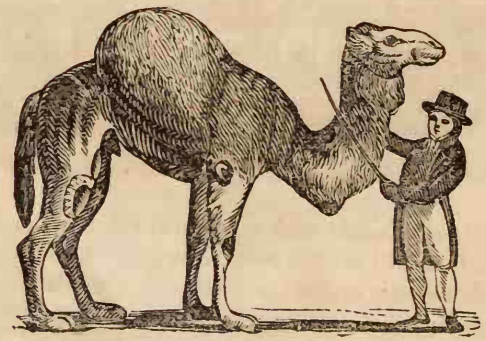
The usually obedient handy camel seemed created with an especial adaptation to the wants of man, from the earliest ages, and in the countries where man first existed. Its nostrils have the capacity of closing, so as to shut out the driving sand, when the whirlwind scatters it over the deserts, or drives it in waves. A company of eastern merchants cross from Aleppo to Bussora over a distance of 800 miles en-

tirely desert sands, each camel of the caravan loaded with from 500 to 1000 pounds weight. The camel needs no whip or goad, but, when weary, his driver sings him a song, or jingles a tune with little bells ! any kind of music pleases this animal, and the de-

lighted creature forgets his fatigue, and toils forward with the caravan of some thousand camels, merchants and pilgrims joining in the chorus of an Arabian melody, with the acconpaniment of perhaps a thousand tinkling bells, or rude instruments of music.

'But, mother,' said William, 'one of these camels in your drawing, has two humps.'

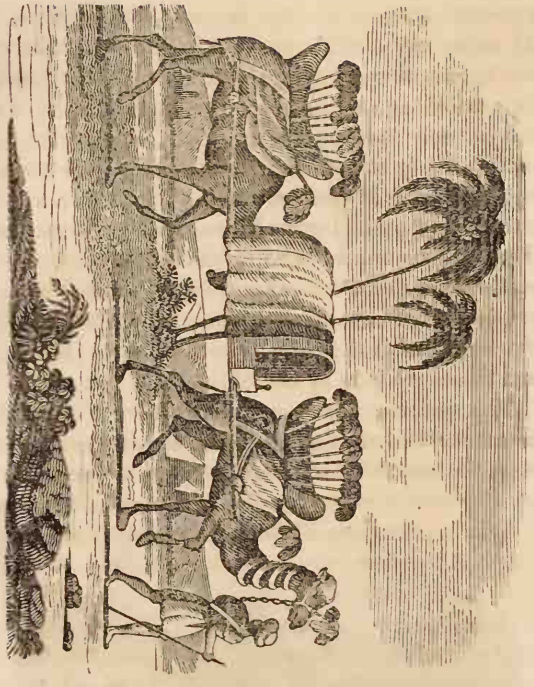
Camels are of two species. The one with one hump is the Arabian camel, or dromedary. The species with two humps is the Bactrian camel. But the people both of Asia and Africa call all pleasure camels, with which they ride or hunt or race, dromedaries; while the baggage or caravan beasts, are not dignified with this title, whether with one hump or two, and travel only half as fast as the racing



camel or dromedary. Mr. Jackson, in his account of Morocco, says, ' Talking with an Arab of Suez, on the subject of these fleet camels, and the desert horse, he assured me that he knew a young man, who was passionately fond of a lovely girl, whom nothing would satisfy but some oranges ; these were not to be procured at Mogadore, and, as the lady wanted the best fruit, nothing butMorocco oranges would do. The Arab mounted his heirie at dawn of day, went to Morocco, about 100 miles from Mogadore, purchased the oranges, and returned (another hundred miles) that night, after the gates were shut ; but sent the oranges to the lady by one of the night watch.'

The caravan camel sometimes carries gigantic panniers, filled with goods ; and sometimes two or more of them will bear a sort of litter or carryall, in which a family of women and little ones are seated.

This is a drawing of Mecca, with camels entering.



The camel forms the riches of the desert. With him the Arab loves his country; without him, he could scarcely exist. Ibrahim, the present new viceroy of Egypt, intends employing 100,000 Copts under European engineers to build a railroad from Alexandria on the Mediterranean over the Isthmus

of Suez to the Red Sea and Arabian Gulf, thus joining, as it were, Europe with Persia, Indostan, and China. These mighty enterprizes result from the discoveries of the poor Scotch boy James Watt. 'The traveller will start from Cleopatra's Needle, reach Cairo in six hours, refresh himself at a mammoth depot in the midst of the waste howling wilderness, and stand upon the ancient shores of the Red Sea in two days after leaving the Delta of the Nile. A railroad through the scene of Israel's flight and Pharaoh's rapid pursuit! through the regions where the law was given from Mount Horeb—now for the first time in thousands of years to be disturbed by the clanking and roar of modern machinery! Here Job drove his numerous flocks to the great marts of the south. Over this hallowed ground his contemporary Moses led the murmuring and mutinous Hebrews to the Land of Promise. This was the path of the multitudinous mohammedan hosts of Amru, when he led his fanatical thousands from Syria to Cairo, and poured his dense dark masses on Southern Europe, to subject the Cross to the Crescent. Here, too, Napoleon eyed the same waters that closed over the engulfed chariots and horsemen of Pharaoh, and exhibited the temerity of attempting to pass dry-shod through the waters of the Arabian sea. But what was this desecration, in comparison with the panting and coughing of the iron horse, within view of the spot where the burning bush exhibited its mysterious sign to the

trembling Moses, where the tables of the law were broken to fragments, and over which the pillar of cloud by day and of fire by night, hovered, and guided the people of Israel to the lovely region of the Philistines and Canaanites. The tour of the holy land, which, in the days of the Crusaders, was a pilgrimage of imminent peril, and accompanied by privations and sufferings little short of martyrdom, will soon be accomplished, by the aid of steamboats and cars, as an agreeable summer jaunt ; and all the scenes of scripture become as familiar to the eye, and commonplace in the mind of almost every transatlantic tourist as the Tower of London or the Lake of Como, the Falls of Niagara or the Notch of the White Mountains.'

The expense of maintaining a camel is very small ; a cake of barley, a few dates, a handful of beans, added to the hard and prickly shrubs of the desert, is all the camel wants. He is particularly fond of plants that are like spears and daggers compared with the needles of the thistle, and which often pierce a man's boot.

He might wish such thorns eradicated from the earth, if he did not see the camel contentedly browsing upon them, and thus perhaps preserving both their lives ; and he thus learns that Providence has made nothing amiss. Thorns and thistles are the camels' choicest provender.

Here ended the account of the camel. Now, said Mrs. Johnson, if you are pleased with knowing the character of the valuable camel, what a great deal of pleasure you may yet attain ! for, when you can read well, and are able to learn geography, I intend you shall read books of travels at the same time ; and thus you will become acquainted with many curious and interesting particulars concerning the qualities of animals, the productions of the earth, and the habits and customs of the many different nations who inhabit the various countries of the globe, which you see delineated on the map.

THE VISIT.

In the afternoon, the children enjoyed a delightful treat. They had been for some time invited to spend an afternoon at a mill, a mile or two distant. The miller had lately married Mary, a servant who had lived with Mrs Johnson, and who was much attached to her and her children. The children were as fond

of Mary as she was of them, and wished much to pay the visit. The day was fine, and their mother told them, if they made haste, and said their lessons soon and well, she would take them in the afternoon to the mill ; and she sent a servant to ask Mary if it would be quite convenient for her to receive them.

Mary Atkins returned answer that she should be delighted to see them all.

After dinner, they set out for the mill. They found Atkins and his wife seated on a bench at the door, as clean and neat as possible. As soon as Mary saw her young favorites, she laid down her knitting, and ran to meet them. She kissed them again and again, and assured Mrs. Johnson she had given her great pleasure, to visit her humble dwelling.

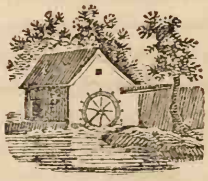
When they entered the cottage, which nearly joined the mill and mill-pond, where boys were angling for perch, they were delighted with its neat appear-

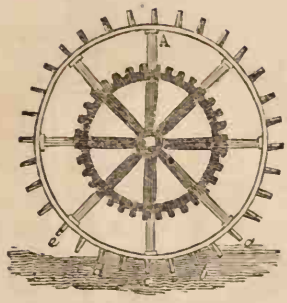
ance. A large oak table, and the seat of the window were rubbed as bright as a looking-glass ; and on the hearth stood a large jar, filled with roses and woodbines, which perfumed the room most delightfully. They also perceived another very pleasant odor, different from that of the roses. Mary Atkins soon showod them what caused this delightful fragrance—she opened a neat little corner cupboard, and produced two large dishes of strawberries, garnished with beautiful scented summer flowers, saying

she had just gathered them in her little garden, hoping Mrs Johnson and the children would find them refreshing after their walk on such a hot day. She then drew a table before them, and placed the strawberries on it, and a pitcher of cream, a basin of sugar, and plates and tea-spoons. The strawberries were a most delicious treat, — and Mary's kindness made it still more grateful.

When this feast was ended, Mr. Atkins requested Mrs. Johnson would allow the children to go with

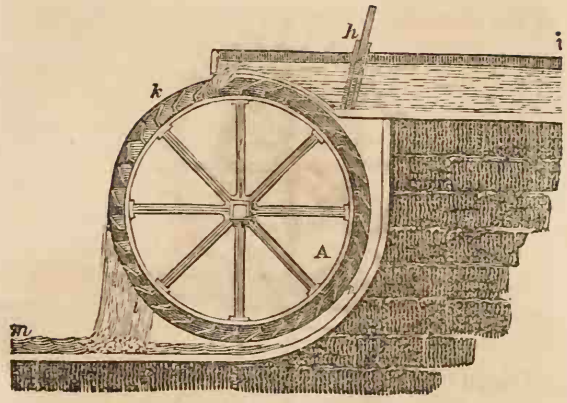
nim to the mill and neighboring windmill, assuring her he would take all proper care of them, and said, he was sure they would be highly gratified with the sight. Mrs. Johnson readily consented, but she charged them to mind all Mr.Atkins said to them, observing, that a mill was rather a dangerous place, if people and children were not careful to avoid touching the wheels and machinery, which turn round with great force. She had heard of many sad accidents happening to children and heedless persons, in consequence of want of proper care and attention. The children promised to attend strictly to Mr. Atkins, who said his careful hired man would lead Frederic, and he would take care of Lucy. Mrs. Johnson knew that her children always kept their promises : therefore, when they said they would attend strictly to Mr. Atkins, she felt quite satisfied ; and told them, as she had seen all kinds of mills, she would converse with Mary till they returned.





The mill was a water-mill ; and the children were astonished to see the great wheel, which was turned by the force of water, cause so many more wheels to turn, and put the whole work in motion. Mr. Atkins told them, that there were three kinds of water wheels, namely, the old-fashioned undershot stream wheel ; the overshot wheel ; and the breast wheel. The undershot wheel is a simple wheel with a number of stationary float boards regularly placed upon its outer surface, dipping into a rapid stream of water flowing from an elevated mill-race or canal ; and this large wheel turns smaller cog-wheels and machinery inside the building.

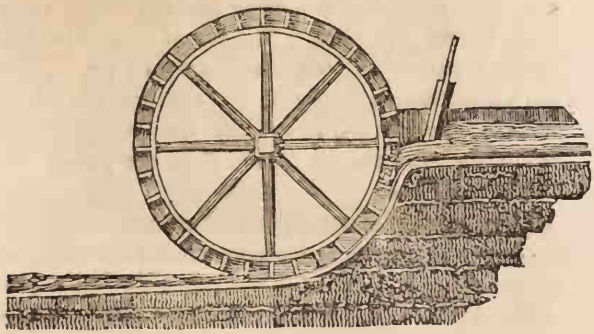
' One of my playmates made an undershot wheel, three inches wide across a gutter, though it had no cog-wheels,' said Frederic ; ' but what is an overshot mill ?'



The overshot wheel, instead of float-boards, has little narrow tubs reaching across the surface of the wheel, which turn and empty themselves as the wheel turns round. These tubs or buckets receive the water at the top of the wheel, instead of the bottom in the old-fashioned wheel, thus husbanding the water and increasing the power by the great weight of water in the buckets. When they successively reach the bottom, they turn upside down, and go up empty on the opposite side of the wheel, to be again refilled. At the top there is a pen or sluice for regulating the supply, else the water would run unequally, or splash over. A stream of about an inch thus fills the buckets, and the same quantity of water on the overshot produce double the effect as

on the undershot wheel, requiring only half as much water, and acquiring perhaps double power.

Frederic said he thought he would try to make a little overshot wheel.



Mr. Atkins said, the third kind of water-wheel is called the breast wheel. This is the kind of wheel now most in use. The water on this wheel, instead of passing either over the top of the wheel, or entirely beneath it, is poured upon it about half way up.

Frederic and Lucy were next shown how a sack of wheat or corn, maize, or oats, was drawn up by a rope, until it was raised over a square box wide at top and narrowing downward like a tunnel, and called a hopper ; this box had a round hole in the bottom, and a small pipe, similar to a funnel, through which the corn gradually fell between two large, flat,

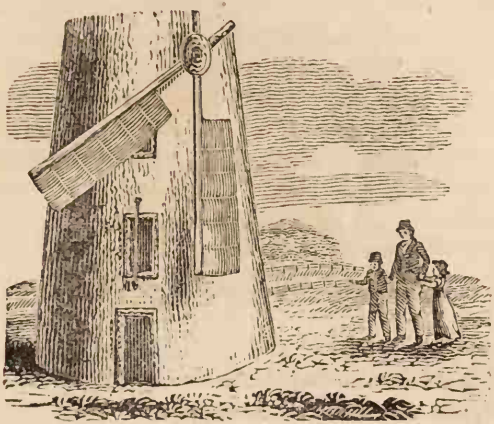
heavy stones, which, being turned round very quickly, bruised the corn into a fine powder, which fell through a hole in the middle of the lower stone into another large box. Afterwards, they saw the flour was carried to another long, round box, placed slanting ; but, instead of this being made of wood, it was made of fine wire-work. The use of this wire-box was to separate the bran from the flour : for, as this box turned round, the flour fell through the wire, and the bran was left ; but the box being placed aslant, the bran did not remain in it, but passed off at the upper end.

Lucy asked if water mills did not saw boards and shingles and planks, and whether it did not plane or smooth them ?

Mr. Atkins said, by different machinery, water power was not only applied to saw-mills but slitting mills, trip hammers, chocolate and paper mills. In country towns, where there are falls, this is done by water power, but, in cities, by steam power. Cochituate pipes, in Boston, might, if necessary, be used as water power for all purposes.

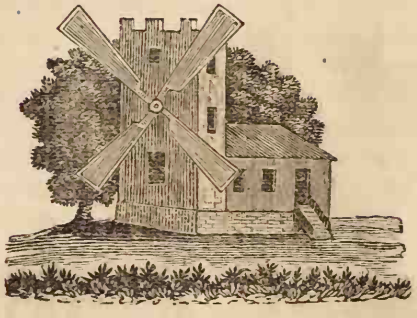
Frederic asked whether steam power did these things, and whether there were any in Boston.

Yes,there is a steam grist-mill in Blackstone street, and near by a planing-mill, and monstrous mills for grinding coffee by steam ; there are many steam mills for other purposes, and a number on the Mill-dam that operate by tide-water power. There are



steam flour-mills in Commercial street, at the head of the Eastern rail-road wharf. But we must look at a windmill. Windmills move almost always, let the wind blow from what quarter it may, by machinery. The two first mills in Boston, 1633, were wind-mills ; one of them stood on Copps'-hill, near the Gas-works ; the other on Fox-hill, exactly on the spot in the Public Garden where there is now a pond, near Charles-street, Boston, and where the boys now grind ice, not with a pair of mill-stones, but with hundreds of pairs of Holland skates.

Steam power is applied to pulverizing and refining beautiful white sugar at East Boston, and mon-



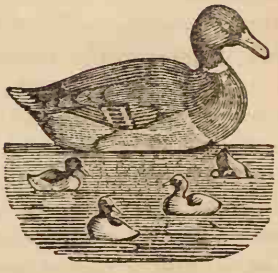
strous iron works at South Boston, &c. which bore out cannon, manufacture iron ordnance for peace or war, and also rail-road locomotive engines.

When the curiosity of the children was fully gratified, they returned to the cottage, and told their mother what they had seen. But Lucy said, though Mr. Atkins was very obliging in telling them a great deal about the parts of the mill, yet neither Frederic nor herself could well understand or hear him, there was such a noise from the many wheels turning round at once, the clanking, clattering sound of the hopper, and the grinding, crushing, thundering low bass of the enormous mill-stones running different ways. Mrs. Johnson said she would next morning show them a drawing of the machinery of a mill; and, as they had now been through one and had a skeleton view of it, they would gradually know the

different uses of the little rapid wheels as well as the stately great wheel ; and she would patiently assist them to acquire a knowledge of every part ; and she also told them, that, when they were a little older, and could understand somewhat about machinery, she would take them to a paper-mill, where old blue worthless rags, scraps of gowns, and patch shreds, of all the colors of the rainbow, black, white, and grey, are bleached and transmuted or turned into beautiful pure white paper, in rolls a mile in length, or, if it were wished, long enough to reach round the world.

Whilst the children were thus telling their adventures, Mary Atkins was in the kitchen preparing tea ; and, when she brought it in, they saw she had provided nice wheat knead-cakes, and excellent milk, warm from the cow : for Frederic and Lucy there was also a plate of honey ; and they were almost as much pleased with the examination of the slices of comb as with the delicious taste of the honey.

After tea, they went into Mary's garden, which was stocked with pease, beans, cabbages, melons, and sweet herbs, and widely bordered with a variety of flowers, fruit and berry bushes and strawberry vines. Mary pulled them a nice nosegay ; and desired them to gather a basketful of ripe gooseberries, to carry home to master William. She then showed them the bee-hives ; but the bees had done work and were at rest. They were then shown the poultry ; and Mr. Atkins said the ducks, goslings,



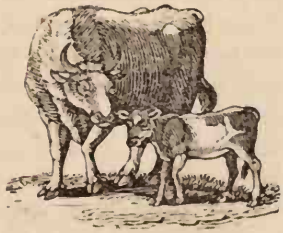
and pigs were fed with the bran which came from the flour, mixed with whey and buttermilk. They saw the ducks swimming about very happily in the mill-stream, and the geese returning home from the pond, marching common time, headed by 'the old gander, whose opinion when and where and wherefore to proceed, seemed implicitly followed, although each and every member of the assembly made the woods re-echo with their trumpet-like voices. Mr. At-

kins said, even when in the air, flying periodically north or south, in a wedge, or in indian file, the geese were always noisy, and always in the same manner marshalled, an hundred or more in a regiment, in hollow squares, or cones, like a Spartan phalanx, the patriarchal gander acting as orderly at the front of each wild-goose cavalcade. Mrs. Johnson told the children that Rome was once saved by the cackling of geese. The enemy mounted the walls of the citadel at midnight. The guards were all asleep at their posts ; but a flock of geese belonging to the sacred temple, were wide awake, and, seeing helmets, spears, and tall figures of warriors clambering over the ramparts, did good service, by rais-

ing their shrill clanging cries or cacklings, effectually rousing Manlius and the garrison by their loud, incessant gabblings, and Rome was saved. The assailants were driven headlong over the battlements, and the Gauls retreated, with the disgrace of having been outgeneralled by a flock of geese.

Mary then showed the barn-yard, where turkeys and bantums strutted about, looking somewhat silly with their important airs ; and Cochin, donking, and dunghill crowers almost stunned them in a variety of discordant thorough-bass, low bass, and other base tones. The little pigs with cunning curly tails, looked so neat so droll, and were so good-natured and

playful, that they appeared mere pets. Mary's kindness and gentleness seemed instilled into the dispositions of the very brutes and birds, and every short-horn, bug-horn, Durham-breed, spotted, speckled, or brindled heifer, was a kind of cosset. Every sleek-haired, mild, kind-dispositioned cow, yielded, as Mr Atkins said, each its pailful of milk twice a day, and was a sort of particular acquaintance, who wished al-



ways to be milked by its mistress. Even the colt answered by a whinny when she spoke to him, came when called by her, and coninually gambolled around the enclosure on his nimble little hoofs, to the great amusement and admiration of the children.

It was now time for the children to return home, and they and Mrs Johnson thanked Mary and her husband for their great civility and kindness. Mary was very sorry to part with her young guests ; and would insist on filling a small jar with honey, for the

children to take home, as they were so fond of it. The children thanked, and kissed, and bid her good-night, at least twenty times. At length they departed with their mother,—Frederic carrying the pot of honey, and Lucy, the little basket of gooseberries.

All the way home, they talked in admiration of Mary's kindness.

You see, my dears, how pleasant is an obliging disposition. Mary, whilst with me, was always obliging, and thereby she gained my regard and esteem. If she had been otherwise, she would not have taken the trouble of gathering the strawberries, nor of making the cake, nor of telling or showing us about the mill or farm ; but an obliging disposition prevents anything being thought a trouble, which can contribute to the pleasure or comfort of others. Such a temper makes its possessors happy, and bestows happiness wherever it extends.

We shall soon reach home, when I shall be busy ; in the mean time, I will answer all your questions.

Lucy said, when her mother, in the account of the camel, told about a young man riding from Mogadore to buy oranges, he rode on a heirie 200 miles in a day. ' Please tell me what is a heirie, mother ?'

The *heirie*, or camel of the desert, looks somewhat like other camels, but is more elegant in its shape, costs a higher price, and is incomparably swifter The Arab, mounted upon this useful creature, with his loins, ears, and breast bound round to prevent

the fatal effects of the suffocating air of the desert, traverses with immense rapidity the scorching sands of the Great Sahara, the fiery atmosphere of which impedes respiration to a degree that would kill any unprotected rider. The motion of the heirie is quick and violent, and can only be endured by those patient, abstemious, and hardy Arabs who can travel three days without other food than a handful of dates. When speaking of this fleet courser, the natives remark in their figurative style,—'If thou shalt meet a heirie, and say to the rider *Salam alec*, ere he shall have answered *Alec salam* (salutation), he will be nearly out of sight, for his swiftness is like the wind." There are three species of the heirie, easily distinguished by the natives of the African Wilderness. The first, which is extremely rare, is denominated the heirie of nine days ; that is, he can perform a nine days' journey in one. The second is the *sabayee*, which in one day can go seven days' journey ; and the third is the *talatayee*, whose speed is limited to a three days' journey in one. With a goat-skin, or porous earthen vessel, filled with water,

a few dates, and some ground barley, the Arab travels from Timbuctoo to Tafilet, feeding his heirie but once ; for, on an emergency, this strong powerful quadruped will abstain from drinking for seven days.

MR. SELBY'S FOURTH VISIT.

THE next time Mr. Selby made a call, Mr. Johnson was out, but Mrs. Johnson was at home with her children. As soon as they saw Mr. Selby, the children clung round him, eagerly reminding him of his promise of telling them about his voyage to India.

'Hey-day !' exclaimed he, 'what a pair of impatient little rogues I have to deal with ! Pray, mister and miss Hasty, let me lay down my hat, and drink a glass of water,—you do not consider I have had a long walk.'

Lucy felt somewnat ashamed at thus considering her own gratification before that of another ; and, recollecting what her mother had the night before said about being habitually kind and obliging, she ran down to the dining-room, and brought up what remained of the basket of gooseberries they had gathered in Mary's garden.

Mr. Selby was much pleased with Lucy's attention. He ate the gooseberries, telling her they

were very refreshing, as the heat of the afternoon, and the dust of the road, had made him extremely thirsty. Lucy was quite glad that she had thought of the gooseberries : her mother looked pleased with her, and she felt ten times happier than if she had eaten them herself.

Come, said Mr Selby, I find you are worthy to-day of all the entertainment I can give ; come, sit down by me, and listen.

The children brought their little stools, and placed them on each side of Mr. Selby's chair. Mrs. Johnson drew her work from the work-basket ; and, when all were seated, their kind friend began :—

You may remember, my dears, I left the African shore, on my way to India. We had a favorable passage, and were not long in arriving at the Bay of Bengal. If your mother has a map, I had better point out to you where the Bay of Bengal is situated, and also all the other places I visited.

' I will get you a map with pleasure,' replied Mrs. Johnson ; and she presently brought one.

Mr. Selby then showed them all the places that the vessel had passed in going from Africa to India ; and he showed them in what part of India Bengal is situated, and where its chief town, Calcutta, stands, whither he was going.

Frederic and Lucy were much pleased with his tracing on the map the course of the ship from Africa to Calcutta. They declared it made them understand much easier about the places Mr. Selby had seen ; and he, finding them so much pleased, said that, after tea, he would point out to them, on the map, the whole of his route from this country. The children heartily thanked him,—and he continued his account as follows :—

After being landed on the Bengal coast, I proceeded immediately to Calcutta. The business I had to

manage kept me close within doors during the day ; so that I had little opportunity of seeing much of this large city, though I had several friends at Calcutta ; for there are great numbers of our countrymen at that place, it being an European settlement.

'Pray, my dears,' said Mrs. Johnson, 'do you recollect my explanation of a European settlement?'

'O yes! that we do,' exclaimed Frederic and his sister, both at once.

'I am glad you do, my loves; it is a great pleasure to me to find you remember my instructions.'

Mr. Selby continued. 'The beautiful fine muslins, which are made in India, are brought to Calcutta, and from thence sent in ships to Europe and America. This manufacture and its export were very great a few years ago; but the effects of the long-reaching, never-tiring, lever-power of Mr. Watt's steam-engine has stopped exportation from Calcutta in a great degree. The fabric is transferred from India to London and Lowell; and the staple itself (cotton) from the banks of the Ganges to those of the Mississippi. The steam factories at home and Arkwright's spinning-jennies begin to supersede manual labor to the ends of the earth. The quantity of cotton, cultivated and wove at home has enabled Europe and America in some degree to rival India and China in some of their ancient products. Cotton goods from Boston and Lowell are already sold cheaper in Bengal and China than their own productions. This is only one out of a thousand of the effects of Watt's discoveries. Engines

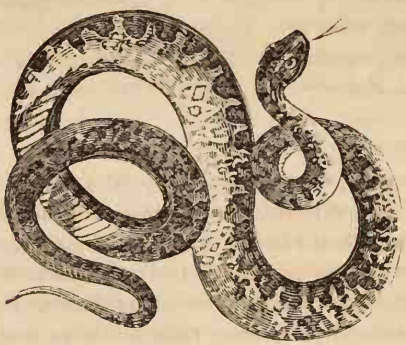
have already, or soon will be in operation, for various labor-saving purposes, perhaps in Canton and Persia. A New-Bedford whaler perhaps may hereafter apply steam to the killing of proper whales and humpbacks among icebergs at the north pole.

My evenings in Calcutta were partly spent in visiting a few friends, and partly in seeing public amusements ; these last, however, among the common people, are mostly confined to the tricks of jugglers, pretended magicians, and mountebanks, and to feats of strength and dangerous dexterity, compared with which those in our own country are merely bungling imitations. The jugglers of India have long been celebrated for dexterity, and, by the heathen natives generally, they are supposed to have intercourse with demons ; a delusion which is kept up by the jugglers. They belong to the lowest castes, they are universally despised, yet universally dreaded. They are outcasts ; but the most common class among these jugglers, and by far the most harmless, is that of the snake-catchers, who infest the towns and fairs, exhibiting their snakes, and accompanying their movements with a music, from which all melody is banished, and the most frightful confusion of sounds produced, worse than our old-fashioned New-England village wedding accompaniments of marrow bones and cleavers, cow-horns, conch-shells and tin kettles. They carry their serpents in round wicker baskets, in which the creatures lie coiled up in a

sleepy state, until roused by the harsh tones of their keepers' flutes. It is astonishing to see how they are affected by the tones of those rude instruments ; for, no sooner do their charmers begin to blow, than the snakes raise their heads, gradually erect themselves, waving their necks to and fro, as if in a state of ecstasy.

This cut represents a snake-charmer with his cossets coiled around him in all manner of attitudes, while at the right of the picture is another charmer blowing his trumpet, to inspire the serpents to activity. The fangs of the rock-snake are not hurtful, but the bite of a hooded-snake is generally fatal ; nevertheless, the charmers do not extract the poison-

ous fangs as is commonly supposed, but exhibit these reptiles with all their powers of mischief unimpaired, and it is the perfect knowledge of their habits that secures them from the danger of being bitten. The rock-snake is usually twelve or fifteen feet long, and allows the man who shows it to tie it round his neck like a lady's boa, and coils it into all kinds of fantastic figures.



These jugglers even take the venomous reptiles in their hands, and put them against their cheeks, pretending that the fangs are extracted merely to prevent alarm in those before whom they exhibit. The jugglers encourage the belief, that is generally entertained, that they have the power of charming all venomous snakes, and commanding obedience,

The medium of communication, they pretend, is the musical instrument, the sound of which infuses into the dumb captive new life and energy. "The same art," says the Abbe Dubois, "seems to have been laid claim to by other ancient nations, witness the allegory of the prophet." The allegory to which he refers is in the 4th and 5th verses of the 58th psalm: "their poison is like the poison of a serpent; they are like the deaf adder that stoppeth her ear; which will not hearken to the voice of charmers, charming never so wisely."

These jugglers frequently impose upon the superstitious Hindoos, by persuading them that their houses are infested with snakes. In order to make this appear, they contrive to place one or two of their own tame ones in some of the crevices of the building. They then enter the house with all the assumed wisdom of ancient sages, and begin to pipe such music as would frighten any other creature than a snake; and, when their own reptile peeps out of its retreat, they snatch it up with becoming gravity, put it immediately into its wicker prison, and there the enchantment ends. These pretended enchanters will sometimes enter every house in a village, and practise the same or similar feats of deceit; and, where imposition is so easy, and impunity so certain, it is no wonder that there is such a number of cunning cheating vagabonds and quacks and travelling fakirs in all parts of India. It must be confessed, however,

that among these jugglers are frequently to be found persons who perform feats of manual dexterity scarcely credible. They possess an elasticity of body, and a flexibility of limb, far exceeding anything ever witnessed in colder latitudes. These people come to your house in broad day-light, and perform their tricks before your own door ; they have no cunningly-devised tables to disguise their art, but only a few implements of their profession contained in a basket, As they are almost entirely naked, they have not any resources common to magicians in other countries.

I will mention an instance, my dears, as it may amuse you. They took the seed of the mango fruit-tree, which they put into a small pot of earth, the size of an ordinary flower-pot. In a few seconds the earth heaves, the head of a plant peeps forth. To the astonishment of the beholder it gradually rises, the buds swell, the leaves unfold, the blossom expands, the fruit forms, grows, and ripens, when it is plucked and is presented to you, and always turns out to be the rich ripe fruit, called mango. The impression is so vivid, the whole effect so overpowering, that you really fancy you see the various operations of the growth. The deception is so perfect, that you forget the palpable fact that a mango tree is about the size of the white oak, whereas this counterfeit rose no higher than a currant-bush. The juggler did not allow you to approach him during the operation.

His next trick was to cover the ground before your

door, to the extent of several feet, with growing flowers. The principal juggler spreads upon the ground a large coarse cloth, over which he mutters his potent spell. He then suddenly raises it, and the whole space underneath is found covered with flowers, of all hues and fragrance, peculiar to that fruitful and blooming country. Again he spreads his cloth, and after a minute raised it, but (presto !) no flower remained, all was bare ground.

After I had seen this done, a tall stout bamboo, forty feet long, was fixed upright in the ground, sufficiently firm to bear the weight of a heavy man. About five feet from the top there was a cross pole fastened to the upright bamboo with strong cords, the whole forming a lofty cross. When all was ready, a short active Hindoo, somewhat beyond the middle age, with compact limbs, and rigid muscularity of frame, approached the cross, grasped the shaft, and, using his hands and feet with equal dexterity, climbed to the cross-bar with the ease and agility of a cat. Placing himself on his back on one of the projecting ends of the transverse pole, he folded his arms, and lay so still that every muscle of his body appeared in a state of complete repose. In a moment he sprang upon his feet, without any apparent preparation or perceptible movement of his limbs ; he then threw himself horizontally upon the point of the upright bamboo, and spun round with a velocity quite distressing to the spectator ; one while

turning on his back, and another on his stomach, changing his position with a quickness and precision that baffles description. He now placed his head upon the extremity of the pole, shook his feet in the air, and raised his arms with the most

terrific animation. Whilst he was thus occupied, eight brass balls were successively thrown to him, which he caught and danced into the air one after another, throwing them in various directions above and round him, when, suddenly, he sprang upon his feet, standing upright upon a diameter of not more than 2 and a half inches, and caught every ball, without allowing one to fall to the ground. He next performed the most extraordinary feats upon the cross-pole; having nothing but his own limbs to balance him, throwing a twelve-pound cannon-ball over his head, catching it below his right shoulder, and, by mere muscular force, repelling it back again, as if it had been ejected from the hand. After suspending himself by the chin, by the toes, and heels, he dropped from the cross-pole to the ground, a height of full thirty feet into our arms, and received our voluntary benefactions with a grateful salaam.

'Was the bamboo pole like Frederic's bamboo fishing-rod?' said little William.

Yes, but larger than an angling or smelt-rod. Bamboo is a native of the hot regions of India and Asia, but, you know, the frame of the negro's hut in Africa (see p. 103) was made of the same material. It is scarcely ever brought to our country except as an object of curiosity, or to catch flounders, perch, and rock-cod at Nahant and Rockaway. But in the

countries where it grows it is one of the most universally useful plants. 'There are about fifty varieties of bamboo,' says Mr. Loudon, 'each of them of the most rapid growth, *rising from fifty to eighty feet the first year*, and in the second perfecting its timber in hardness and elasticity. It grows in clumps

which are cut every two years. The quantity of timber, furnished by an acre of bamboos, is immense ;' and renewed every two years from the same roots. ' Its uses are almost without end. In building it forms almost entire houses for the lower castes in India, and enters both into the construction and furniture of those of the higher castes or orders.' A bamboo chair, for instance, with gildings and trappings, is light, strong, and beautiful. ' Bridges, boats, masts, rigging, agricultural and other implements and machinery ; carts, baskets, ropes, nets, sail-cloth, cups, pitchers, troughs, pipes for conveying water, pumps, fences for gardens, fields, &c. are made of bamboo. Macerated in water it forms India paper ; the leaves are generally put round the tea sent to foreign countries ; the thick juice is a favorite medicine. It is almost indestructible by fire, resists acids, and, by fusion with alkali, forms a transparent permanent glass.' Your father's walking-cane is a piece of bamboo.

' I thought it was called a rattan,' said Lucy.

Rattan is one of the kinds of bamboo, of which there are many varieties ; rattan is tougher, and more elastic, but does not grow so large or high as the bamboo in the engraving.

At this moment, Mr. Selby was called out of the room. When he returned, he told Mrs. Johnson he was sorry he must leave her on some business of im-

portance ; however, added he, I have yet an hour to devote to my young friends' service.

' Then I wil order tea immediately,' said Mrs. Johnson, ringing the bell.

Thank you, replied Mr. Selby ; and, while we are drinking it, I will relate a sad account told me by one of my elderly Calcutta friends, which took place a few years ago at this place. One of the native chiefs was displeased with the Europeans, and made war on them. His army was stronger than theirs, and he destroyed their houses in Calcutta, and took a great number of prisoners. Several of these prisoners were put together into a small dismal dungeon, where they had hardly room to move, and which was only lighted by two narrow windows, strongly barred with iron. The air is extremely hot in Bengal : and these poor men had scarcely been a few minutes in this close confinement, before they fell into a violent perspiration, that weakened them exceedingly—they tried to get a little relief by stripping off their clothes, and fanning themselves with their hats : but many of them became so weak, they fell down, and were suffocated.

The violent heat, and want of air, presently brought on an intolerable thirst, and difficulty of breathing. Those who were strong then endeavored to break open the door of their dungeon ; but all their efforts were in vain, it was too well secured. They were

now in such agony, that they implored the soldiers, who were outside, to fire on them through the grated windows, that death might release them from the agonies they were suffering. This the soldiers durst not do: they had no orders to kill these wretched sufferers, several of whom now lost their reason, and became mad, through distress; while all who were able, vehemently cried out for water, water! The soldiers brought them some water, but in such small quantities, it only increased their desire for more. It was eight o'clock in the evening when these distressed men were put in the prison—before eleven, which was only three hours after, many of them were dead, in consequence of their dreadful sufferings. Among those who survived, one gentleman kept his mouth moist, by sucking the perspiration from his shirt sleeves, and catching the heavy drops as they fell, like rain, from his face. A disgusting smell presently arose from the dead bodies, which, from the heat and contaminated air, soon became very offensive, and the cry for water was again changed into an earnest request for air. About two in the morning, they crowded so much to the windows, that many died standing up, unable to fall, on account of the throng and pressure around them.

When day-light appeared, the native chief, who had been informed of their dreadful situation, sent an order for their release; but nearly all had been already released from torment by death. Of the

whole number who were crammed into this frightful prison (about 200), only six came out alive! and these in the most exhausted and helpless condition, from which they were long in recovering.'

During this recital, both Mrs. Johnson and her children were so much affected with sorrow for the severe fate of these unfortunate Englishmen, that Mr. Selby had ceased speaking some time before any one broke silence. At length, Mrs. Johnson said she had heard of another calamity at Calcutta,—a famine; and asked Mr. Selby if it were true.

Alas! replied Mr. Selby, that account was but too true. I was myself in Calcutta at the time, and I was about to tell you I was partly compelled to leave Bengal on account of the misery it occasioned.

For many months there had been no rain, which, in that country is death to vegetation. The harvest entirely failed among this improvident population. When the scarcity began to be felt, the rich people distributed their own stock of rice among the poor; but, when that was all gone, thousands on thousands died with hunger while wandering in search of food, lost and sinking down in streets, fields, and hovels; and shocking it was to see dogs and vultures feed on the dead bodies of our fellow-creatures. Many persons were employed in throwing the dead into the rivers, as it was impossible to bury them. This made the water, as well as the air, corrupt; so that

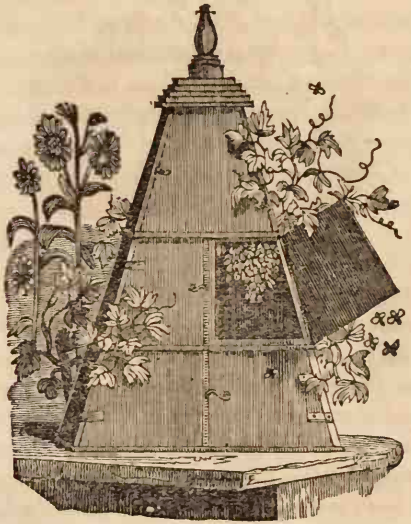
the fish, on which some had hitherto subsisted, could no longer be eaten. Glad was I that my business forced me for a time to leave a country, where I had not the power of assisting the wretched, and where my own life, from want of sustenance, was in hourly hazard. Now, added Mr. Selby, looking at his watch, it is time for me to keep my appointment.

THE BEES.

Next day, at tea, as the children were eating the honey Mary Atkins had given them, the curious appearance of the honey-comb induced the children to ask many questions about bees. They knew how honey and wax were obtained and preserved by bees, from reading Miss Edgeworth's book about Little Frank, but they wanted to know a great deal more; for they had heard their father once talking with a

gentleman about the economy of bees, and they did not know what was meant by the 'economy of bees.'

Mrs. Johnson told them, what was called 'the economy of bees' signified their admirable management of their work, and disposal of themselves into parties, the better to accomplish it; and also their submitting to be directed by one, whom we call the Queen-bee, because she commands the whole hive, all the operations in which are seen in a glass hive.



This single bee, when young, is fed by the working bees, with the best of the honey ; and they make her a cell three times as large as the cells of the common working bees.

The industry and activity of bees is truly wonderful ! not one in the whole hive is unemployed ; Some are engaged in gathering honey and wax ; others in rebuilding decayed cells ; some keep guard at the entrance of the hive ; to prevent ants and other pilfering insects coming in ; some are employed in carrying out the dead,—for, when one bee dies, the other bees will not allow the dead body to stay in the hive ; they drag it to the entrance, and throw it over the stone on which the hive is placed. If the dead body be a large one, too heavy for the little laborers to drag, they cover him over with wax, so that nothing is seen, literally embalming him against all putrescence. They keep the hive beautifully clean and neat. It is said, by people who have kept glass hives, that, when they begin to work, which is as soon as warm weather has covered the fields with verdure, and the trees and shrubs with sweet blossoms, they divide themselves into four companies ; one of which roves the fields, in search of farina, the sweet dust of the flower, which they form into bread or as some say into wax ; a second party is employed in laying out the bottoms and partitions of the cells ; a third troop in smoothing off all the rough corners ; and the fourth, in collecting and bringing

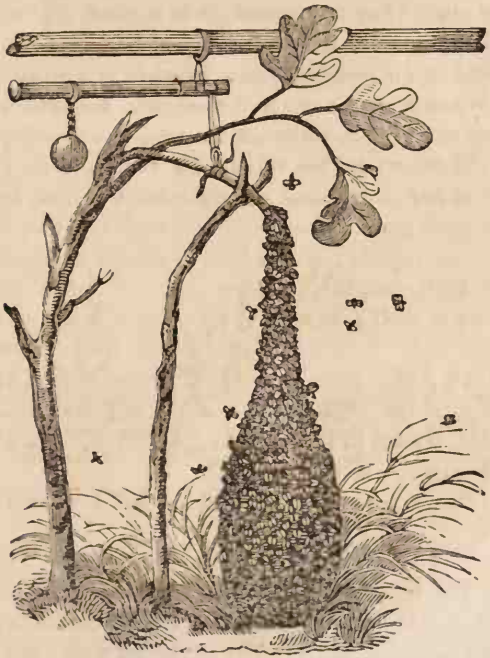
the honied stores for the support of the hive. Sometimes they relieve one another, by exchanging their employments, the rovers laboring at home.

I have been told some curious proofs of the attachment of bees to their queen, by a gentleman who paid particular attention to their movements. He assured me that bees would not sting, unless offended; and that if a person, when bees are buzzing round him, would stand still, be would not be hurt.

When bees swarm, that is, when a colony leave an overflowing hive, to form a new one, the operations of the new hive are conducted by a new queen.

The swarm below have alighted on a bough of alburnum. Their owner had previously prepared an

empty hive, smeared inside with walnut or some other sweet leaves, and holds it under the bough, whilst an assistant with a long pole strikes the limb a violent blow, which precipitates the swarm into their new abode. The face and hands of the owner are protected from stinging, by transparent gauze or silk.



This was the old mode of keeping new swarms at home. The *swarming* is a curious sight. In the last drawing they have alighted on a bough, which they almost bend to the ground. They pile upon one another in a beautiful, but ingenious manner. The number of individuals, composing a swarm of bees, is very great. In the picture, the swarm contains 40,000. They are settled on a fig-tree. The machinery you see is a contrivance of Reaumer the philosopher, for weighing them when in this situation.

When a swarm is about to alight, the queen-bee does not, at first, settle on the branch where the rest of the swarm do, but waits till a considerable number of her companions are clustered together, before she joins them. Soon after this, however, they cluster very rapidly; all the bees in the air hastening to join their companions, clinging to each other by the claws of their feet, as they do when they are making their wax. Swarms vary in size from 12,000 to 40,000; but, whether small or large, they form a beautiful specimen of the wonders of providence.

Mr. Irving, in his Tour in the Prairies, has given a description of a Bee Hunt.

'Please let us hear it, mother,' said Frederic.

A BEE-HUNT.

'The beautiful forest, in which we were encamped,' says he, 'abounded in bee trees; that is to say, trees in the decayed trunks of which wild bees had

established their hives. It is surprising in what countless swarms the bees have overspread the Far West, within but a moderate number of years. The Indians consider them as the harbingers of the White Man, as the buffalo is of the Red Man ; and say, that, as the Bee advances, the Indian and Buffalo retire. We are always accustomed to associate the hum of the bee-hive with the farm-house and flower-garden ; and to consider those industrious little animals as connected with the busy haunts of man, and I am told that the wild bee is seldom to be met with at any great distance from the frontier. They have been the herald of civilization, steadfastly preceding it as it advanced from the Atlantic borders—The Indians with surprise found the mouldering trees of their forests suddenly teeming with ambrosial sweets, and nothing, I am told, can exceed the greedy relish

with which they banquet for the first time upon this unbought luxury of the wilderness.

'At present the honey bee swarmed in myriads, in the noble groves and forests that skirt and intersect the prairies, and extend along the alluvial bottoms of the rivers. It seems to me as if these beautiful regions answer literally to the description of the land of promise, 'a land flowing with milk and honey;' for the rich pastuarge of the prairies is calculated to sustain herds of cattle as countless as the sands upon the seashore, while the flowers with which they are enamelled render them a paradise for the nectar-seeking bee. We had not been long in the camp when a party set out in quest of the bee-tree; and, being curious to witness the sport, I gladly agreed to accompany them. The company was headed by a veteran bee-hunter, a tall lank fellow in homespun garb that hung loosely about his limbs, and a straw hat shaped not unlike a bee-hive; a comrade, equally uncouth in garb, and without a hat, straddled along at his heels, with a long rifle on his shoulder. To these succeeded half a dozen others, some with axes and some with rifles, for no one stirs far from camp without his fire-arms, so as to be ready either for wild deer or wild Indian.

'After proceeding some distance. we came to an open glade on the skirts of the forest. Here our leader halted, and then advanced quietly to a low bush, on the top of which was a piece of honey-comb. This

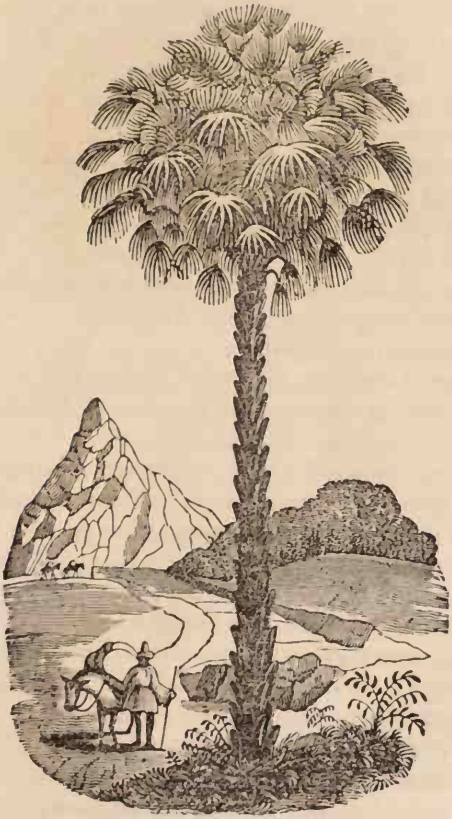
I found was the bait or lure for the wild bees. Several were humming about, and diving into its cells. When they had laden themselves with honey, they would rise into the air, and dart off in a straight line, almost with the velocity of a bullet. The hunters watched attentively the course they took, and then set off in the same direction, stumbling along over twisted roots and fallen trees, with their eyes turned up to the sky. In this way they traced the honey bees to their hive, in the hollow trunk of a blasted oak, where, after buzzing about for a moment, they entered a hole about sixty feet from the ground. Two of the bee-hunters now plied their axes vigorously at the foot of the tree to level it to the ground.—The jarring sound of the axe seemed to have no effect in disturbing or alarming this most industrious community. They continued to ply at their usual occupations, some arriving full freighted into port, others sallying forth on new expeditions, like so many merchantmen in a money-making metropolis, little suspicious of impending bankruptcy and downfall.—At length down came the tree, with a tremendous crash, bursting open from end to end, and displaying all the honied treasures of the commonwealth.

'One of the bee-hunters immediately ran up with a wisp of lighted hay as a defence against the bees. The bees, however, made no attack and sought no revenge —Every one of the party now fell to, with spoon and hunting-knife, to scoop out the flakes of

honey-comb with which the hollow tree was stored. —Such of the combs as were entire were placed in the camp kettle to be conveyed to the encampment ; those which had been shivered in the fall were devoured on the spot.—Nor was it the bee-hunters alone—I beheld numbers from rival hives, arriving on eager wing, to enrich themselves with the ruins of their neighbors. These busied themselves as eagerly and cheerfully as so many wreckers on an Indiaman that has been driven on shore : plunging into the cells of the broken honey-combs, banqueting greedily on the spoils, and then winging their way full freighted to their homes. As to the poor proprietors of the ruin, they seemed to have no heart to do anything—but crawled backward and forward in vacant desolation, as I have seen a poor fellow with his hands in his breeches-pocket, whistling vacantly and despondingly about his house that had been burnt.

' We now abandoned the place, leaving much honey in the hollow of the tree. ' It will all be carried off by varmint,' said one of the rangers. ' What vermin ?' asked I. ' O, bears, and skunks, and raccoons, and 'possums. The bears are the knowingest varmint for finding out a bee-hive in the world. They'll gnaw for days together at the trunk till they make a hole big enough to get in their paws, and then they'll haul out honey, bees and all.'

Bears are so fond of honey that they often invade



out at the top like a parasol, 180 feet high, or much loftier than our fourth-of-July flag-staff.

Bees' wax was formerly supposed to be formed by these busy little artists from the yellow pollen, with which their thighs are loaded, taken from flowers; but it now appears that it is made by this insect, from honey or substances fabricated by themselves. They make not only the store but the storehouse.

Wax figures, fruit, candles, etc. you have seen; and great quantities of wax were brought from the Levant, Barbary, and other bee countries; but the discovery of gas for beautifully illuminating public and private houses has superseded the necessity of burning expensive wax candles in any great degree.

Bees have many insect, bird, and animal enemies, who want to prey upon the fruit of their industry and honied hoards laid by for a rainy day—Some of these loafers, like other thieves and robbers, are midnight and some mid-day marauders. The fox is a dangerous enemy in winter, devouring the honey in a hive at two or three midnight visits; mice in cold weather, bats, and birds, are destructive. I have seen a kingbird perched on the ridgepole of a farmhouse, where hives were kept, watching for bees, who fly home in straight lines, the bird ever and anon pouncing upon them in mid air, till observed by the owner, who shot the thief, and found his crop filled with dead bees. Toads and frogs place themselves at the opening of the hive, and catch the bees as they pass; and spiders set their nets near every hive; but another insect, still more artful, conceals itself in the corolla of

a full-blown poppy or other blossom, and murders the innocent bee during his flowery and honied repast.

Bees are sometimes destroyed by their own voracity, quarrels, and wars. During long winters

the bees of a hive, short of provisions, sometimes leave home and attack a neighboring hive.

'Mother,' said Lucy, 'is the large bee we see in the fields, and which Frederic calls a bumble-bee, a queen bee ?'

No, my dear, that is another species. The bee I have been describing is called the domestic bee. He lives under the protection, or in the neighborhood, of man. All insects, as well as animals, which do not well endure the winter's cold, are endowed by nature with sufficient instinct to lay up for themselves provisions enough to last till the ensuing spring. The bumble-bee is properly the Humble or humming-bee, having a humming voice. It is one of the wild tribes, of which there are many species, and some of them are highly curious. They are named or distinguished by their manners, the formation of their nests, or other peculiarities ; one or two of these curious mechanic bees I will notice.

Some are called Leaf-cutters, because they cut the leaves of rose-bushes and other trees into pieces of an exact size, as if measured by rule and compass, to form little cells, in which to deposit their eggs. This kind of bee does mischief to large trees by digging holes in the solid timber, sometimes a foot deep. Within the little *leaves of leaves*, formed as it were by Gunter with a mason's line and plummet, this species of bee deposits a sufficient quantity of

honey to supply the future young with subsistence, until it is able to seek food for itself.

There are other kinds which dig similar cavities in the earth, as cells for their young.

Some of these bees line their cells with fine down; others, with the beautiful leaves of the rose, whence they obtain the name of Tapestry-bees.

Another species are called Mason-bees, because they build their nest in a very extraordinary manner, in a warm sheltered corner of a house-wall, generally under the eaves, which serve as a covering for the nest. When the mason-bee has found a suitable place for her nest, she looks out for sand proper for her building: this sand she picks up grain by grain, cementing it with saliva, and braiding it into little balls; then, taking this ball in her mouth, she transports it to the place which she intends for her nest, and forms it into cells, about the size and shape of a thimble. When each cell is finished, the little mason deposits in it a store of farina, mixed with honey, for the sustenance of the future bee.

When all the cells are finished, and the eggs laid in each, the Mason-bee proceeds to close up all the empty spaces between the cells, and then covers the whole with coarser grains of sand and cement, until it becomes so solid, it is difficult to separate it from the wall, even with a knife or mason's trowel.

'Does a little mason-bee learn to make mortar and brick from men masons?' said William.

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I believe not, my love ; perhaps masons may have learnt of the bee. Bricklayers probably built the tower of Babel ; but, as the garden of Eden was full of flowers and fruit, and was planted long before the times of Nimrod, it is probable it abounded with all kinds of honey-bees. The school of nature is the school of art ; and, originally, perhaps it was the only one ; nature was the drawing or picture, by which, from the time of Tubal-Cain down to that of Watt, ingenious men, in all ages, have made surprising and beautiful specimens of human proficiency, but which, viewed through a microscope, look very much like bungling imitations of the model.

But it is time for you to go to bed.

THE SUGAR-CANE.

Mr. Selby's visits were renewed in a few days ; and, as all his friends, both young and old, were delighted to hear him, he resumed his narrative :—

In a month or two, I returned to Calcutta to complete a cargo of indigo, India sugar, and other articles, which will bear a long voyage. During my absence, plentiful showers had renovated the face of nature, and crowds of people again thronged the streets and public marts.

'Are not fruits, oranges, figs, and lemons, brought from Calcutta, as well as indigo, sugar, and rice?' said Frederic. 'Please tell us about sugar.'

Many useful articles are still brought from India, though less so than formerly; but fruit, unless preserved, would be injured by a long voyage.

Sugar has almost become a necessary of life; its cultivation has therefore been adopted in climates congenial with its growth. It has been propagated extensively in Louisiana in our own country. The scattered Indians on our borders, and the pioneers of the woods in Maine, Canada, New Hampshire, and Vermont, spend the spring months in tapping

Leaves of the Sugar Maple Tree

millions of maple-trees and boiling the juice. You have seen maple boughs, with serrated leaves, like the teeth of a saw, in the young Maple avenue, of beautiful greenness, on Boston common. The five-and-twenty millions of inhabitants of Great-Britain employ three hundred thousand tons of shipping to export six or seven hundred million of pounds of sugar from their colonies in the East and West Indies. France, Spain, &c. perhaps an equal amount.

The Sugar-cane was a native of China, and, like tea, its cultivation was monopolized by them for 2000 years before sugar was even known in Europe, and, for a great part of this time, its nature and uses were unknown even to nations in the neighborhood of China. When it found its way, in its crystalline form, westward, through India and Arabia, it was a mystery whether it was or was not a mineral.

A knowledge of the origin of cane sugar was correctly revealed in the 13th century, by the celebrated traveller Marco Polo. The plant was soon conveyed to Arabia, Nubia, and Egypt, where it was extensively cultivated. In the 15th century, the sugar cane first appeared in Europe ; first in Sicily ; thence it passed into Spain, Madeira, and the Canary islands ; and, with the discovery of the New World by Columbus, this plant was conveyed to its congenial climate Hayti, Brazil, and the West Indies.

The sugar-cane in new and moist land sometimes rises twenty feet in height. The hoeing of a cane-

field is a most laborious operation, when performed under the rays of a tropical sun ; but, within a few years, where the nature of the ground will allow the use of the plough, that instrument has been substituted. The planting of canes does not require to be renewed annually ; many more laborers, in such a case, would be required.

When the canes are fully ripe, they are cut close to the ground ; and, being cut in convenient lengths, are tied up in bundles, and conveyed to the mill. The canes, on being passed twice between the cylinders of this mill, have all their juice expressed. This is collected in a cistern, and must immediately be placed under process by heat, to prevent its becoming acid. A certain quantity of lime or lime-water is added at this moment, to promote the separation of the grosser matters contained in the juice ; and these being removed as far as possible at a heat just sufficient to cause the impurities to collect together on the surface, the cane liquor is then subjected to a very rapid boiling, in order to evaporate the watery particles, and to bring the liquor to such a state that it will granulate (or candy) on cooling. Upon an average, every five gallons of cane-joice will yield six pounds of sugar, and will be obtained from about one hundred and ten well-grown canes.

When the sugar is sufficiently cooled in shallow trays, it is put into hogsheads, in which it is shipped. These casks have their bottoms pierced with holes, and are placed upright over a large cistern, into which the molasses—which is the weaker portion of liquor that will not crystallize—drains away, leaving the raw sugar in the state in which we see it at our grocers' shops ; the casks are then filled up, headed, turned upside down, and re-headed at that end.

The liquor in the cistern is put into hogsheads and sold as molasses, and is distilled into rum.

'How did folks sweeten their tea and coffee before sugar was known?' said Lucy.

Sugar was known and used long before the habit of drinking tea or coffee;—bread-and-milk, milk-porridge, and hasty-pudding, were seasoned with salt, and meats with spice, sweet herbs, &c. Honey always existed, ever since the creation of bees.

'Please tell us about indigo. Are the casks you

have shipped, like the blue indigo with which yarn is colored ?' added Lucy.

INDIGO.

The secret of the existence of indigo and sugar was brought to Europe by Marco Polo, a Venetian, who travelled in China and other Eastern countries, in the 13th century. His only reward was, to be called " The Lying Traveller." All his statements have proved true ; but the ignorant people of those dark ages were slow in belief, and the lying traveller, as they called him, died under that imputation.

All knowledge is public property, because it is for the good of the human race ; China and India therefore, if they withheld the knowledge of the uses of indigo, tea, and sugar, from the rest of mankind, did wrong ; but, with regard to indigo, no prohibition ever existed in India. Europeans themselves prohibited it, either because they thought its color was not durable, or that it was a worthless mineral. Ignorance of it as a plant, and of its true qualities as a dye, confined its cultivation to its native place, and for 2000 years it was used only in India.

' Indigo,' said Marco Polo, ' of excellent quality and large quantities is made here (in the kingdom of Coulan). They procure it from an herbaceous plant, which is taken up by the roots and put into tubs of water, where it is suffered to stay till it rots, when they press out the juice. This, upon being exposed

to the sun and evaporated, yields a kind of paste, which is cut into small pieces of the form in which we see it brought to us.' Marco Polo also visited Guzzerat and Kambaia, in India, where it was made.

In the 14th century it was brought to Europe in bags and in chests, in the same manner as at present.

But it was not until after the discovery of America that indigo was used in Europe in large quantities. The plant was found growing wild in most of the tropical countries of America. Its application had long been known by the natives; the Aztecs, the aboriginals of Mexico, and other tribes used it as a dye in giving a beautiful hue to their cotton fabrics. Guatimala, or central America, principally supplied Europe during the last century, and, since throwing off the Spanish yoke, are now reviving its culture.

This plant was extensively cultivated in the West Indies. In 1747 it was found growing spontaneously in Carolina, and 200,000 pounds shipped to England.

The judicious and spirited exertions of Englishmen in British India, within a few years have improved its quality so much, that vast quantities are now shipped from Bengal (the original place of its culture in the old world) for Europe and America.

The seed is sowed in little furrows about the breadth of the hoe, two or three inches deep, the furrows in straight lines about a foot apart, like your father's pea-garden. The weeds are constantly pulled, and the indigo is fit for gathering in two months.

When it begins to flower, it is cut with a sickle a few inches above its roots. A second crop from the roots is cut in six or eight weeks. Four crops from the same roots are cut in a year, but fresh sowing every year is needed. The coloring matter is obtained from the whole plant.

While absent from Calcutta, I had frequent opportunities of observing the habits of animals, birds, Mohammedans, and Hindoos.

'Did you see any tigers, leopards, elephants, or lions?' said Frederic.

Yes, but fortunately escaped any harm. I however heard many sad accounts about them.

'Please tell us one or two, at least,' said Frederic.

A few years ago, a party of young men, while on a deer hunt, were attacksd by an enormous tiger of the species called the royal tiger of Bengal, which sprang upon one of the party, son of sir David Munro, and carried him off towards a jungle. One of the other gentlemen fired at the beast, and his shot took effect; the tiger ran some distance farther, then dropped his prey, and the unfortunate Munro returned to his companions, covered with blood, and so dreadfully lacerated by the teeth and claws of the monster, that he survived but a short time.

Yet more recently, while with a party of hunters,

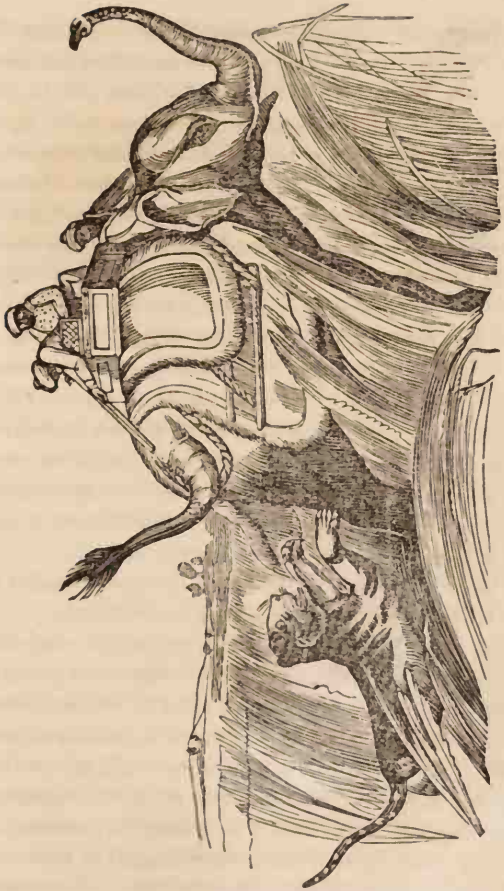
an officer was carried off by a tiger; but he fortunately was able, after several fruitless attempts, to extricate a pistol from his belt, and, deliberately putting his hand on the heart of the beast to ascertain its precise situation, fired with so good an aim, that the animal fell dead on the spot. The officer was not very seriously injured.

The skin of the tiger is extremely fine and glossy, and commands a high price in eastern countries, especially China, where the Mandarins make use of it to cover their seats of justice, and also for cushions and pillows. The ground color, of those of the most beautiful kind, is yellow, very deep on the back, but growing lighter towards the belly, where it softens

to white, and also the throat, and inside the legs On the back there is a transverse set of bars of the most beautiful black, varying in number from 20 to 30, and becoming black rings on the tail, always 15 in number ; the legs are crossed in the same manner.

The tiger delights in human flesh, and, far from shunning the presence of man, frequently seizes him as his victim. These animals seldom pursue their prey, but lie in ambush, crouched in bushes or high grass, and bound upon it from a distance almost incredible, but always with unerring aim ; their strength and agility are wonderful, and they sometimes carry off a buffalo with perfect ease. They will attack all kinds of animals, but are somewhat shy of the elephant, who is employed in India to hunt that scourge of the country, as horses have such a dread of the tiger that they can scarcely ever be brought to face him.

Against this unfair foe, who seldom attacks openly, sportsmen are found anxious to encounter him, or the lion, or the leopard, who all lie in ambush, ready to pounce upon human or brute prey. An instance was told me. ' Lord Combermere and nine others, composing our sporting party, mounted our elephants, attended by 20 spare elephants to beat the covert, and carry the game, and Mahouts (elephant drivers.) After securing some game we proceeded towards a swamp, pointed out to us as a lurking-place of the buffalo-devouring monsters. We beat



the jungle for half an hour, and I was beginning to yawn in despair, when my elephant suddenly raised his trunk, and trumpeted several times, which my Mahout said was a sure sign that a tiger was near. Our thirty elephants, formed into line, and proceeded slowly to windward. We had beat the covert in this direction about three hundred yards, and had entered a swampy part of the jungle, when the tiger suddenly appeared, and a shot was fired at him by Capt. Mundy. The tiger answered the shot with a loud roar, and boldly charged the line of thirty elephants. Then occurred the most ridiculous but most provoking scene possible. Every elephant, except lord Combermere's (which was a known stanch one) turned tail, in spite of all the blows and vociferations of the mahouts. One, less expeditious than the others, was overtaken by the tiger, and severely torn in one of his hind legs. The tiger now proceeded to attack his lordship's elephant, but, having been wounded in the loins by the first shot fired, he failed in his spring, and shrunk back among the rushes. My elephant was one of the first of the runaways to return to action ; and, when I joined Lord C. whose animal had stood like a rock, he had expended all his ammunition. I handed him a loaded gun, and we poured a volley of four barrels upon the tiger, who attempted a fresh charge, but fell from weakness ; recovering for a moment, several shots were expended upon him before he dropped dead. He was now triumphantly

stowed upon a pad elephant (baggage carrier) among other game.'

The cubs of the tiger are very playful. It has been imagined that the natural ferocity of tigers can never be wholly subdued, and that neither gentleness nor restraint make any alteration in their disposition ; but there appears to be no greater difficulty in rendering this animal docile, than there is in the case of the lion ; and, in the menageries, both these animals generally appear under complete control ; so much so that the keeper will frequently enter their cages and caress and handle them with as much good humor as when playing with his dog.

The elephant is invariably employed in hunting the tiger in Bengal. His delicate scent, his strength to make his way through the thickest covers, his sagacity, and especially his great height, by which the hunter is lifted out of danger, render him peculiarly

fitted for such a work. Horses cannot be brought to hunt the tiger ; and camels are unable to defend themselves against him.

I am no friend to animal hunting, and am fully convinced that most wild animals might be tamed for useful purposes, if reading and our other duties were not of more consequence. If idle people, however, must hunt, let them murder noxious animals, and not elephants and useful birds.

' The Vedahs, a savage tribe near Trincomalee, says Mr. Holmes, ' have a strange way of killing elephants peculiar to themselves. They go out against the animals in great numbers, and drive a herd up a hill, when a few marksmen, provided with bows and

arrows, the latter notched in the centre, steal close to the heels of their destined prey, and, when the animal lifts its leg, they discharge their arrows, endeavoring to hit the centre of the foot ; when the unfortunate elephant suddenly stamps on the ground from the pain, and the arrow breaks off at the notch, and the head is left sticking in the flesh. Perfectly disabled by his agony, the animal is compelled to lie down, when a shower of arrows and other missiles easily despatch him. These people are careful to select the tuskers, or males, as it is for the tusks, chiefly, that the Vedahs hunt, for, although they eat the flesh of the elephant, they do not esteem it so highly as that of deer and hogs, which they have in abundance.' Thus thousands of wild male elephants are destroyed at Ceylon, &c. for their ivory tusks.

—' We fell in with three elephants, standing under a tree at the edge of the jungle ; they were throwing sand over their bodies, and flapping themselves with bundles of grass, to keep off the flies. They sometimes use large branches of trees for this purpose, which they manage with great agility.'

' Elephants, even when wild, evince signs of great ingenuity, forethought, and memory. They generally go in herds or companies. If one of the number gets hurt, the others bring him food. In crossing a river, the old experienced ones swim over first, to seek a proper landing place ; and, when on the other side, give a signal, by a sort of trumpet sound

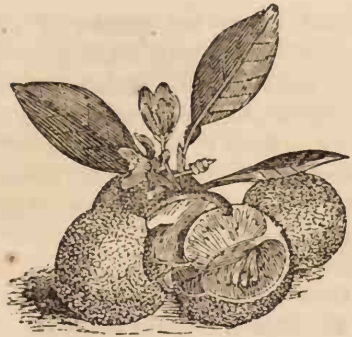
through their trunk, for the young ones to follow. The little elephants then venture across, supporting each other by interlacing or locking their trunks together. The old ones sometimes carry the very small ones laid high across their tusks, twining their trunks round them to prevent them from falling.

There is a story of an elephant who was so fond of its keeper's child, that he would not eat his food unless the infant's cradle was placed between his feet. If the child awoke and cried, the elephant put it to sleep again by rocking the cradle with his trunk.

In travelling, he sometimes carries a driver and two or three other persons, and takes them across a river without inconvenience, his trunk or nostrils elevated high above the water.

An elephant has the strength and can do the work of six horses, but is fed with a hundred pounds of rice in a day, drinking forty gallons of water.

'Please, sir, do not oranges come from India ?'



Oranges are natives of China and India, but, on account of the distance of these countries from Europe and America, we import fruit from the West-Indies, Malaga, Sicily, &c. Perhaps when a rail-road is made to the Red Sea, steam-boats and cars may bring fruits from India to Europe in about as many days as were formerly required in sea voyages to the West Indies, Mediterranean, &c. Food, as well as fruit, can be transported. If Watt's engines had been in practical operation previous to the great drought at Bengal (see p. 180) no famine would have been felt, and thousands of lives been saved. All countries, by the aid of steam, may be furnished with food, &c.; and all future generations will be secured against the occurrence of many ancient disasters.

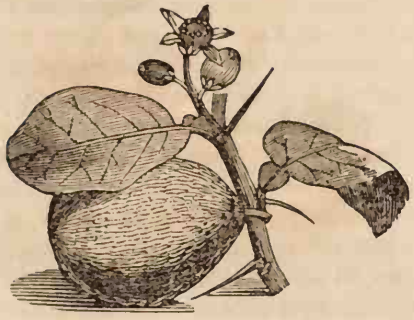
A rail-road across our quarter of the globe, at the isthmus of Darien, may connect by steam the West India and East India islands, and bread stuffs, in case of famine, be rapidly transported from Atlantic countries to those of the Great Pacific, and *vice versa*. These results will be mainly produced by the poor Scotch boy, who was self-educated in his mother's chimney-corner.

The Orange proper, which you sometimes taste, grows in Cuba and other islands, and in Florida; there are 43 different kinds of sweet oranges; 32 of bitter oranges; 5 of bergamotte oranges; 8 kinds of the lime; 6 of the pampelucos; 12 of the sweet lime; 47 kinds of the lemon; and 17 of the citron.

I will speak only of 2 out of the 170.

The sweet orange tree is about twenty-seven feet high, but sometimes reaches fifty feet, bearing from 4000 to 6000 oranges. One of these trees at Rome is 600 years old. The orange tree continues to blossom all summer, and the fruit is on the tree two years to ripen, so that a healthy tree has on it bud, blossom, and green and ripe fruit at the same time—oranges intended for export are picked green. Great Britain takes three or four hundred millions of them in a year. They are a wholesome fruit in the summer season, but some of our own common summer fruits are still more so, moderately used.

The Shaddock Orange is much larger than the common orange, both in the tree and the fruit. The tree



very lofty and spreading, and the fruit eight inches in circumference. This fruit is a native of China, where it is very sweet and excellent ; it has however greatly degenerated in the West Indies, probably through neglect ; although some of these oranges from particular trees retain their original sweetness.

' Which of our summer fruits are as wholesome ?' said Lucy.

All ripe ones, if sweet and eaten with moderation.

I need not speak of cherries and huckleberries, you know them ; and here is a drawing of currants, at *a* ; gooseberry, *b* ; raspberry, *c* ; strawberry, *d* ; and mulberry, at *e*. There are 35 kinds of Currants ; I will name only four of them, the red, the white, the flesh-colored, and the black. The juice of currants,

boiled with an equal weight of sugar, forms currant jelly. By adding sugar to currant juice, and fermenting it, currant wine is made. The jelly of the black currant is so much used in the throat disease called quinsy, that black currants are sometimes called quinsy-berries. The dried leaves of black currants as well as those of huckleberry bushes, have sometimes been substituted for tea, and cured in a similar manner, (see p. 14.)

There are four kinds of Gooseberries, the white, the yellow, the green, and the red, although there are 200 varieties. The yellow are the best. The small ones, like the red currants, are sweetest, because they grow on the sunny side of the bush.

Raspberries, when fully ripe, especially the red

some. There are 35 kinds. One of these, called the thimbleberry, abounds in New England, and the red raspberry is plentiful among old logs in forests.

Strawberries grow in all countries, divided into 7 kinds, the scarlet, black, pine, green, alpine, hautbois, and wood. The pine strawberry, plentiest in Virginia and Louisiana, is the best.

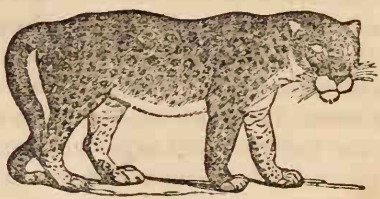
The mulberry tree is one of the most useful of trees, as its leaves are the diet of silkworms. Silkworms, it is said, were unknown in Europe till the time of the Roman emperors, when some eggs were brought from China in the hollow staff of a pilgrim or missionary traveller. Silk sold at Rome for its weight in gold. But it is the *fruit* of mulberries, of which we are speaking, and it ought to be eaten the moment it is ripe. There are four kinds, the black, white, red, and paper mulberry. I do not think the fruit very wholesome, except for birds ; no more than the leaves, except for silkworms. The trees require gentle shaking to procure sweet fruit, and, to catch the berries, a sheet is spread on the ground ; whilst a bird, perched on the tree, never fails of gathering choice mulberries without any inconvenience.

Birds live upon insects ; fruit and seeds are their dessert ; and children ought to be equally moderate.

Our own cooling fruits and berries, however, coming as they providentially do, just at the time we want them for the purpose, go far towards counteracting all tendency to fever and other diseases.

'Are leopards as big as the tiger?' said Frederic.

'The African leopard, though far inferior to the lion or Bengal tiger in strength and intrepidity, and though he usually shuns a conflict with man, is still an exceedingly active and furious animal. The colonists call him a tiger, and he is possessed of some of the cunning of the fox added to activity truly astonishing, rendering him more troublesome than either lion or tiger. His appearance in his wild state is extremely beautiful, his motions in the highest degree easy and graceful. Of his agility in bounding among the rocks and woods, no one can form any idea by seeing these animals in the cages where they are exhibited in this country, humbled and tamed as they are by confinement, the cold of our climate, and without the excitements of hunger and habitual depredation. When caught young, they are, like other tame animals, leopards only in shape,



carrying their tails between their legs, as in the above drawing,—instead of rampant as in the follow-

ing picture, where the animal appears lashing his sides in fury, whetting his formidable incissor teeth, and cat-like monstrous claws, his eyes glaring and as it were striking fire,—or, if couchant, his huge paws spread out on the ground, his head crouched between them, excepting his horrid fiery eyes, his body quivering like that of a cat,—previous to bounding with the quickness of lightning upon his prey.

'In 1822, two farmers, returning from hunting the antelope, roused a leopard in one of the mountain ravines, and attacked him. The leopard endeavored to escape by clambering up the precipice; but, being hotly pursued, and wounded by a musket bullet, he turned upon his pursuers, and, springing upon the man who had wounded him, pulled him from his horse to the ground, biting him at the same time on the shoulder, and tearing his cheek severely with his claw. The other hunter, seeing the danger of his comrade, sprang from his horse and endeavored t

shoot the animal through the head ; but, from fear of wounding his friend, or the quick motions of the animal, he unfortunately missed hitting him. The leopard now abandoned his prostrate enemy, and darted with redoubled fury upon his second antagonist ; and so fierce and sudden was his onset, that, before the hunter could stab him with his hunting-knife, the leopard struck him on the head with his claws, and actually tore the scalp over his eyes In this horrid condition, the hunter grappled with the leopard ; and, struggling for life, they rolled down hill. All this passed in a single moment ; and, before the man who had been first attacked could start to his feet, and seize his gun, they were rolling down the declivity. As quick as possible he reloaded his gun, and rushed forward to save the life of his friend. But it was too late. The leopard had seized the unfortunate man by the throat, and mangled him so dreadfully, that death was inevitable ; and his comrade (himself severely wounded) had only the melancholy satisfaction of completing the destruction of the savage beast, who was already nearly exhausted with loss of blood from several deep wounds inflicted by the hunting-knife of the desperate expiring farmer.'

In Africa the leopard is often seen at night in the negro villages ; and, being considered a sacred animal, is never hunted, though children and women are often destroyed by him. The white colonists

have no such respect for him, and of them he is more shy, only occasionally destroying some defenceless infant. He lurks round sheep-folds, and sometimes breaks into them, in spite of troops of watch-dogs.

The leopard is often caught by traps made of large stones and timbers, in the shape of a stupendous mouse-trap. When he is hunted, he jumps upon a tree, both for security and a station from which to attack his foes, and it is dangerous here to approach him, as he leaps with ease from his elevation upon men and dogs to an incredible distance ; the bullets of his assailants here reach him, though from his active movements it is difficult to hit a vital part. He is therefore commonly called the Tree Tiger, yet he only bounds from limb to limb, or from the ground to the crotch of a tree, and thence to greater heights. The Africans catch them in pitfalls, covered by slight sticks and brush, on which the bait is fastened.

 Looking-glass Trap.

There are accounts of leopards being taken in a trap by means of a looking-glass at the bottom of it. Seeing, as they think, another leopard in the trap, they jump in, and bring down the door, as in the picture

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CEYLON.

Mr. Selby's visits were renewed in a day or two, and he entertained the children with an account of the pearl-fishery in the island of Ceylon :—

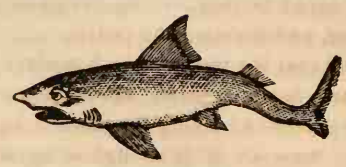
When I quitted the continent of India, said he, I proceeded immediately to Ceylon. As we approached the shores, our noses were disgusted by a most disagreeable smell, for which we could not account, as the island presents, to the eye, a most beautiful verdure ; and the fine groves of cocoa-nut trees extend in every direction. The refreshing green of the fields was the more pleasant to me, who had for some time past been fatigued with the glare of the white sand which edges the coast. The beauty of the rural scenery, however, soon gave place to a different prospect, as we rounded a part of the island, and made for the bay of Condatchy.

It was the season of the *pearl-fishery :* and the shore was crowded by hundreds of human beings of East Indian tribes, and with Europeans of different countries. Tents and huts were erected on the sand, with a booth before each, at which pearl-dealers were

busily employed buying, selling, weighing, numbering, drilling, and dressing the pearls.

I was told that the oysters which produce the pearl lie on several banks of sand about this celebrated bay. The manner of diving for them is highly curious :—The boats are large enough to contain twenty men ; ten of whom row, the other ten are divers, who go into the sea five at a time ; when they come up, the other five take their turn. The divers tie large stones to themselves, to quicken their descent. With one hand the person, who is going down, grasps the rope that supports him, and, with his toes, holds a bag of net-work in which to put the oysters. When he is at the bottom, he hangs the bag to his neck, and fills it as quickly as possible ; then giving the rope a pull, his companions in the boat draw him up, and the other divers in the mean time descend. By thus alternately diving and rising they soon obtain a boat-load of oysters. A similar process is or was followed at our pearl-fishery on the coast of California ; but gold-digging at Sacramento and San Joaquin has somewhat impeded pearl-diving.

The occupation of diving is, in some respects, highly dangerous. The longest time the most expert diver can stay under water is six minutes ; holding the breath for a longer time frequently causes blood to rush from the nostrils. But the greatest danger arises from the sharks, who frequent these seas, and whose bite is dreadful. Whilst I was looking on, a



poor diver was drawn up to the boat in a shocking state : one of these voracious sea-monsters had seized his right leg, and cut it off, bone and all, at one bite ! This event struck such terror into the men of this boat, that their day's diving was ended.

The children shuddered with horror and surprise, and, with all the eagerness of curiosity and humanity, expressed their pity and at the same time their anxious desire for further information about this dreadful fish. Their mother said, that, according to agreement, she would explain every thing more fully at another time.

Mr. Selby, pleased with observing their desire for knowledge, told them he would give them some account of the wonderful productions of the island. Rejoiced with this kind attention to their wishes, the children heartily thanked him; and little William placed himself on Mr. Selby's knee, as the most convenient situation for watching every turn of his countenance.

'Well,' said Mr. Selby; 'we have got the divers' oysters, but we have not yet got the pearls. Perhaps, continued be, taking Mrs. Johnson's hand, 'you never thought these pretty ornaments on your mother's ring were produced by an oyster, and obtained with such labor, hazard of life, drowning, suffocation, and White Sharks!'

'It is,' observed Mrs. Johnson, 'this difficulty of obtaining them, that adds to their value. Were we only to judge by appearance, the necklace I sometimes wear, made of a composition to imitate real pearl, would altogether answer as well for ornament.'

'O mother,' exclaimed Lucy, 'I shall now long to hear all about silver, and gold, and diamonds, and those pretty red stones on your bracelet-clasps; for I suppose their history will be as entertaining as pearls.'

'You are right, my dear. When we examine the productions of nature, we are rewarded for the search by the most rational pleasure. Depend upon it, Lucy, in learning you to read, I bestow upon you a most valuable gift; and, when you are well acquainted with your own language, and begin to learn others, the sources of enjoyment will increase by opening to you fresh subjects of enquiry—But we interrupt our friend.'

When the boats are full of oysters, continued Mr. S. these oysters are landed and placed in pits about a foot deep, lined with mats, to prevent any of the pearls from being lost: there the oyster remains

until the animal subtance entirely decays, and the shell becomes easy to open, without hazard of injuring the pearl. It is during this state of decay that the intolerable stench as it were poisons the air.

The merchants are liable to lose some of the pearls from the thievish disposition of some of the ignorant boatmen, who narrowly watch the oysters, and, if they see one gape, will prevent the shell from closing by slipping in a piece of wood, until they find a convenient chance to complete their knavery by extracting the pearl. I could not help pitying these poor people, who, knowing nothing of true religion, submit themselves to strange fanatical persons, who are their priests or fakirs. If one of these priests can be prevailed upon to stay in the boat, the divers think they will be perfectly safe from the sharks. The pearls, when completely dressed, are white and very beautiful, and much esteemed in our jewelry stores; but in India the yellow Arabian pearls are preferred.

I think I have said as much as you can understand about these dearly-bought ornaments; but tomorrow will tell you more concerning the island of Ceylon.

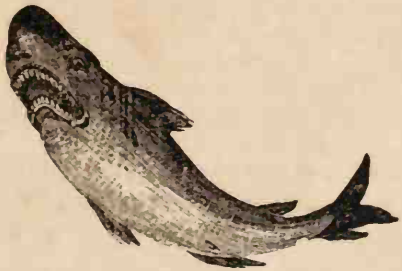
THE SHARK.

'Now for the shark, mother! you know you promised to tell us about these dreadful fishes.'

I will indeed, my love, with pleasure, replied Mrs.

Johnson. Sharks are truly most formidable enemies to mankind, and would be more so, did not the element, in which they live, render our meeting with them rare and accidental.

There are several kinds of sharks ; some of them are harmless, and known by the name of Baskerville Sharks, from their habit of lying on the surface of the water, seemingly sunning themselves. But the more dreadful kinds, which are common in the great sea, are extremely fierce, and so fond of human flesh, that it is said they will swim near the edge of the water if they perceive a person walking on the shore. It is certain that, a few years ago, one of them jump-



ed out of water over a fisherman's boat in Boston outer harbor, and devoured the fisherman.

The largest of the shark tribe are prodigious creatures, with throat so wide, they can swallow a man

whole. From this it is conjectured, the fish that swallowed Jonah was rather a shark than a whale ; as a whale has a small throat, although he is an enormous fish. The mouth of the shark is extremely curious ; it is furnised with six rows of teeth, very sharp and terrible. These teeth are triangular, or three-sided, and notched like a saw, which renders their bite peculiarly ragged and dreadful ; the teeth lie flat when the mouth it shut, but instantly rise when it is opened. He strikes violently with his tail ; and, to avoid the danger incurred by the exertion of this power even on shipboard, as soon as a shark is caught, the people anxiously make it their first concern to chop off the tail with an axe.

We have yet another singular kind of shark, called the Hammer-head, from its head resembling that of a hammer. I will some day show you the picture of one. Their eyes are placed, as it were, at each end of the hammer, and the middle is so sharp, that it can cut other fish as the shark swims.

The White Shark is the most blood-thirsty of all the monsters of the deep. This species does not abound on the coast of New England. In the pearl-fisheries of South America, where they are numerous, the divers, in their descent for the oyster, are obliged to go armed with long sharp knives. The shark endeavors to get above his intended victim, and slowly settles down over him, with his horrible mouth extended. The instant he is near enough to

be reached, the diver stabs him in his vitals. Sometimes the Indian diver takes down four or five hard-wood sticks about two feet long, sharpened at both ends. If disturbed by a shark, he deliberately thrusts one of the sticks between the monster's jaws, as the animal is closing them. This props them asunder whilst the force of endeavoring suddenly to shut his mouth drives the sharp ends into both of his jaws, and, writhing with pain, the shark hastily retreats.

In the South Sea islands, the people constantly bathe, without fear, among White Sharks, who are probably satisfied with fish which there abound. In the West Indies, the negroes, armed with knives, destroy them for sport. And in California, the natives occasionally seek a combat with this species of shark, 20 or 30 feet long, to amuse our miners. The shark turns on its back to bite, if he is under his prey.

The shark does not attack birds ; and the sailors have a proverb, ' The shark flees from feather.'

' Mother,' said Lucy, perceiving her mother had done speaking, ' you said the sharks lived in an element that prevented them from doing much mischief, because people could keep out of their way. What do you mean by an element ? don't they always live in water ?'

My dear child, I acknowledge that grown people, when talking to children, make use of terms or words, of which children do not know the meaning, and I

highly commend your always asking an explanation of me. We are every where surrounded by four articles, which, being necessary to the formation of every thing else, are called elements, or simple substances, from which every variety in nature is composed : these four are Earth, Fire, Air, and Water.

'That is very odd, mother; how can all the things I see be made of fire or water, earth or air ? Why I see no water in this table. You must be jesting, mother ; I am sure there is neither fire nor water, earth nor air, in the books lying here.'

'Do not be too hasty in your conclusions, my dear. I really am not jesting ; but the truth is here so wonderful, I am not at all surprised at your astonishment. Recollect, this table (that is, the wood) was once a magnificent, towering tree : from what did this tree arise, and how was it nourished into growth ? You have seen an acorn ? Here is one in a little phial where it is beginning to sprout ; and here, in this larger phial, it has already assumed on a small scale the very features of the future noble tree. Well, did you ever consider that this acorn might increase, have bud upon bud,

and branch upon branch, and become a large and spreading tree, and one of the leaves be larger than its parent acorn ? How is this accomplished ?

'The acorn must be put into the ground,' said Lucy.

Well then, how is it nourished ?

Lucy was silent. She had often admired the size and beauty of the oak, and she knew some of its uses, but she had not reflected on the wonder of its growth : she saw neither fire, earth, air, nor water about it.

'We will then trace the progress of its growth. The acorn, planted in the ground, is first swelled by the moisture of the Earth, then it puts forth shoots, which soon spring above the ground : rain is then necessary to supply it with proper juices,—here we

have Water. Warmth from the sun is also necessary,—thus we add Fire. And, without Air, it would not thrive at all. Now do you not perceive how the oak requires these four elements, or *first things*, to form it into a tree ? And this tree may be reduced entirely into earth by being burnt to ashes.

But you think the books are not reducible to these four elements. Well, we will try. The leaves are paper ; paper is made from rags, rags were once cotton or linen cloth ; linen is made of flax, and flax is a plant nourished into growth in the same manner as the oak. You have seen the pretty flax in our field, fed by the same elements, and nourished by the same process. Cotton grows, in vast quantities, in our own country, a beautiful plant, flowering on a shrub in Tennessee, &c. The ink used in printing is, by art, obtained from mineral or vegetable substances ; so is the coloring, the gilding, and the varnish.

All this is highly curious : yet it is only a slight view of what is wonderful in nature in a single object. I wish you to search, to find, and to learn for yourself. I may not be permitted to remain always your guide, and other people perhaps will not have leisure or inclination to instruct you. Books afford inexhaustible sources of information ; and information, studiously obtained, and modestly brought forth, will always be likely to receive assistance from those who have further information and knowledge. But sensible books are always at your own command.

FURTHER ACCOUNT OF CEYLON.

When Mr. Selby called, the next day, he resumed his account, as he had promised, about Ceylon.

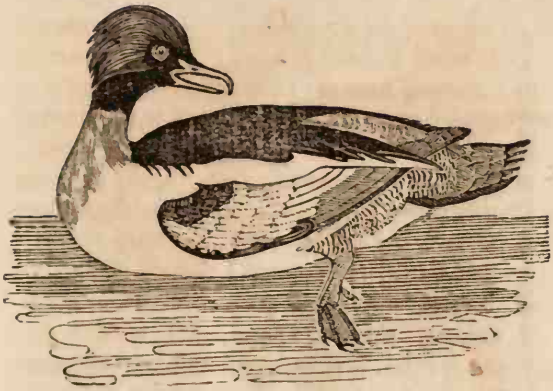
You may remember, I told you the groves of cocoa-nut trees looked most beautiful on approaching the Ceylonese shores. But their utility exceeds their beauty ; they are serviceable for a variety of purposes. Frederic may have seen the nut ; it is as large as your head, William, but not of the same shape, being rather long, like an egg ; and enclosed with a thread-like substance, which is sometimes woven into ropes ; the shell of the nut is lined with a white kernel, agreeable in taste, somewhat resembling an almond, and used for similar purposes. The cocoa-nut also contains a large cupfull of a pleasant liquor called the milk of the cocoa-nut ; this cooling beverage is peculiarly refreshing in a hot climate. Thus kindly has Providence given every country not only what is suitable to climate and the subsistence of all, but also with what is agreeable and delicious.

I engaged a servant to attend me, who had served in Hindostan, and other countries ; but, whilst selecting what I should take on a journey in this wonderful island, I found part of my provisions stolen. I had no hope of recovering them ; but my servant knew the credulity of his countrymen, and told those he suspected that I was a great magician, or wise

man, and knew what would happen, and I had foretold, if the thief did not confess, in a few moments, his guilt would be made publicly known by a parrot's feather growing from the tip of his nose. Whilst he thus talked, I walked a little distance to a thicket of bushes, soon followed by my servant, where, unseen, we observed their motions. Presently we saw one man put his hand to his nose. Immediately we hastened forward, my servant telling the thief we saw the feather beginning to sprout ; and the poor superstitious wretch fell at my feet and restored the goods.

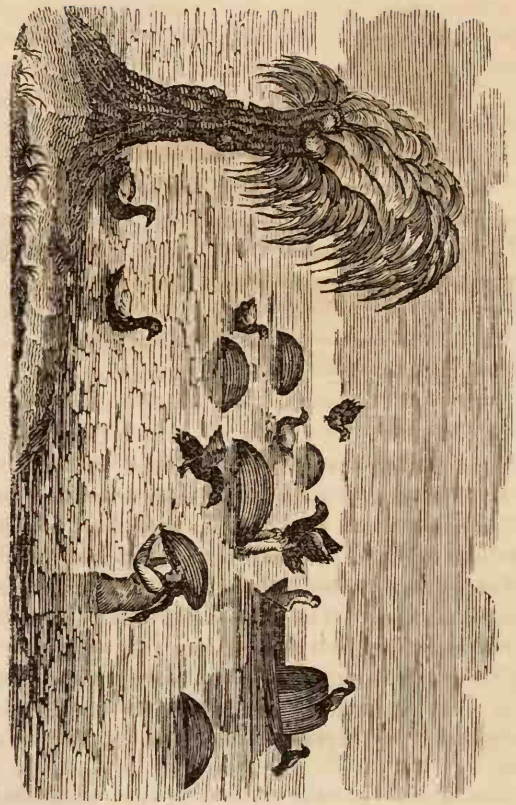
As we journeyed, I observed many curious customs, and views. The women would be handsome, were not their noses artificially laid quite flat to the face. This singular and disfigured appearance is done during infancy by purposely breaking the gristle of the nose, a flat nose being considered a mark of great beauty. Observe, my dears, how mankind differ in their notions of beauty and fashion ! Some of the men wore such enormous gold ear-rings, I wondered how their ears sustained such burdens ; but I was told they had had pieces of wood passed through the ear in childhood, which was gradually enlarged.

I was told that wild ducks are here (as well as in Hindostan and China) often taken by an ingenious, though, as usual in most hunting sports, very cruel method. ' The hunters put their heads into the shells of large gourds, or dry calabashes, in which they leave holes, through which to see and breathe,



and then go into the water, frequented by aquatic birds. The hunters swim about, taking care to have nothing seen above water, except the gourd shells. The poor ducks, accustomed to see such things floating about, and to play and seek food among them, think of no harm. The hunters carefully swim close to the ducks, lay hold of their feet, and, after drawing them quickly under water to prevent their cries, they wring their necks, fasten them to their girdle, and proceed to capture more game in like manner.

The Hindoos use the earthen jars, in which their rice is usually baked, instead of these large gourds, or calabashes.



Here is a picture of the sport ; and also a fishing-boat in the background. This last is descriptive of

a method of catching fish by means of cormorants, who are a species of pelican, or fish-hawk. In their wild state, I was told to my astonishment, these large swimming birds assemble and fish in large circles, flapping their wings to frighten the fish, gradually approaching each other by closing the circle with fish near the surface of the water, and the pelicans then proceed to devour their prey.

In their tame state these birds show equal sagacity. Their owner has a number of them in his boat, each trained to catch fish in his long bill, and bring them to his master, who, when he has loaded his boat, rewards his cormorants with some of the captured fish. To prevent these birds from swallowing their prey, a ring is placed round their necks, till the hunt is over; but, generally, these faithful servants need no such precaution; they fish first for him, and then their grateful master lets the bird fish on his own hook. It was even told me (though I thought it incredible) that, when a cormorant caught a fish too bulky for individual management, two or three of these birds assisted in towing it to their masters.

The feats of these birds are so surprising, that some writer, in describing them, says:—"Scarcely are the porcelain towers of these populous plains gilded with the first beams of the morning, when the lake, formed by the waters of the river Luen, are covered with ribands and streamers. The boats, pushed from

the shore, are abandoned to the gentle breeze and the wave. On the yards of the masts are these birds, of the most brilliant plumage. At a given signal the aërial laborers dart away, suspend themselves a moment over the unruffled bosom of the wave, to see their prey. They plunge beneath the surface, and re-appear each with his fish, and then return, amidst acclamations and shouts of joy, to the boat of their master."

On the road we met a moodelier, one of their great men, walking,—an exercise here rarely taken, as all the rich are carried in a sort of sofa, called a *palanquin*, stretched on poles, supported on the shoulders of coolies or porters, and attended by numerous servants. One bore an umbrella, made of the immensely large leaf of the talipot-tree, the beautiful ornament and useful tree of Ceylon ; another carried his gold box, containing betel, which the inhabitants of the East chew as sailors do tobacco. The box was beautifully wrought in filigree,—a kind of open-work in metal, in the elegant execution of which these people surpass all others. A third attendant, a sort of secretary, had charge of a book, made of the leaves of the same tree as the umbrella.

The book itself was a curiosity. The talipot tree supplies many wants. Its leaves are their fan, their parasol, and their umbrella, and, strange to say, this natural leaf of the magnificent talipot tree appears as if it was the model from which the fan of my little

friend Lucy was originally copied. Perhaps other works of nature have, ever since Adam was formed of the dust of the ground, in like manner with this Ceylonese tall talipot tree, been the prototypes and models of works of human ingenuity. Nature in this country furnishes fans in every grove, and a single grove might afford an abundant supply of the article for all the stores in Broadway and Washington-street, if fashion could relish a commodity, the staple and fabric of which grows here as it were on every hedge.

"However much water may fall on the leaf, it imbibes no moisture. The British troops, in their campaign in the jungles against the Ceylonese in 1818, found to their cost how excellent a preservative it was against wet and damp. The enemy's musketmen were furnished each with a talipot leaf, by means of which they always kept their powder and arms perfectly dry and could fire upon the invading forces, while frequently the British muskets, which had no such protection, were rendered useless by the heavy rains, and the moisture of the woods, thickets, and jungles, and the soldiers were consequently unable to return the fire of the native Ceylonese army."

Having no paper to make into books, the Ceylonese cut slips from the talipot leaf, a foot in length, and 2 inches in breadth, which they smooth and mark with a fine steel pencil, in the Cingalese characters. To make these more distinct, they rub them over with charcoal and oil, which, sinking into the marks made

by the steel pencil, blacken and render the words more legible ; several of these leaves are strung or tied together, and fastened in thin boards or covers of highly ornamented ivory. All their customs, luxuries, conveniences,—all their castes, moodeliers, their rich classes and low ones, artizans and coolies,—are no doubt exactly similar to those in remote antiquity.

The beautiful Talipot is sometimes called the Sago or the Landan tree. Knox says it is as big and as tall as a ship's mast, and I saw one a hundred feet high and five in circumference near the ground. It has no branches, and no leaves except at its summit. But these leaves are so large as to shelter a dozen men. From its pith and juices Sago is made, also bread and cakes ; but, from its leaves, which are impervious to moisture, roofs, hats, books, umbrellas, and hundreds of other articles are made. It flowers but once during life, the natives say when it is 100 years old, the Dutch say 30 years—the hard rind of the flower then bursts with a sharp noise, and the flower shoots upward, adding about 30 feet to the height of the tree. Old age and flowers seem to go hand in hand, for the tree, after beautifully blooming, immediately decays and dies.

Knox says of its leaves :—" A marvellous mercy, which Almighty God has bestowed upon this poor and naked people."

' Does all the ivory in the world come from a few elephants' tusks ?' said Frederic,

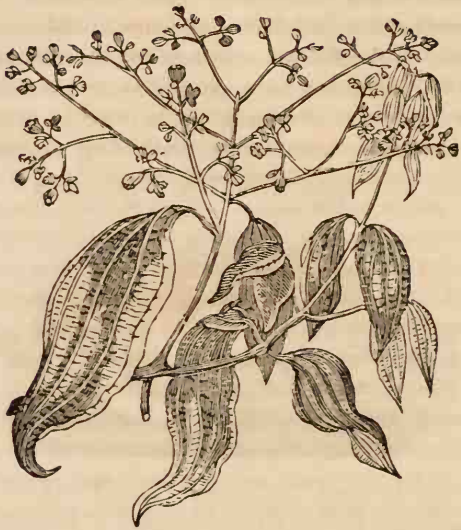
Yes. There are many tame elephants, used in war, in Asia and Africa, and many wild ones, especially in the Birman empire, where the hunters not only kill them, but catch many alive by means of female decoy tame elephants. The ivory is valuable, and always preserved on the death of all elephants.

'Are pearl oysters like New-York oysters?'

Much the same, but larger. The New-York oyster is caught for the rational purpose of being eaten, the pearl oyster for the jewel in its empty shell.

THE CINNAMON-TREE.

We presently after arrived at a cinnamon plantation, which presented a beautiful appearance. It was the season of taking the bark, or outer rind, (the spice you so much admire,) which is taken off twice in every year. The bark is carefully picked, tied up in large parcels, and every piece tasted by a per-



son appointed for the purpose, before it is delivered to the merchant. This tasting, for a constancy, is not a very pleasant office ; for the pungency of such a repetition of tasting the spice produces painful effects on the skin of the mouth ; and the tasters are obliged frequently to chew a piece of bread and butter to diminish or mollify this disagreeable effect.

The cinnamon tree is a species of laurel, originally found growing wild on one part of the island ; but, when Ceylon was conquered by the Dutch, they cul-

tivated it in plantations, and soon obtained 400,000 pounds annually, employing 25,000 people. The tree is about 30 feet high. The leaves are first of a delicate rose color, which turn yellow, and then green. The flowers are white, spreading around a sweet flavor like that of the bark ; and the fruit yields a fragrant oil, which is made into candles, and burnt in the palace of the king of the island. The tree yields two other kinds of oil; that which is obtained from the leaves is called the oil of cloves ; and the bark of the root affords an aromatic oil, called by the Ceylonese islanders, oil of camphor ; and also a kind of gum camphor, which is very pure and white.

The cinnamon tree grows best in dry and rocky spots ; and at 10 or 12 years of age yields the most pungent and aromatic bark. The shoots are cut when about an inch thick, and the outer skin scraped off ; the bark is then dried in the sun, and, when it curls the smaller pieces rolled within the larger.

We proceeded 150 miles into this beautiful-looking island, saw the sacred banian-trees, under whose wide-spreading shade, acres in extent, pious Hindoos were worshipping at bamboo altars.

The decaying trees, when hollow, serve as burial-places and tombs for poets, musicians, and buffoons. Characters of this description are in great esteem among Africans, while living, but otherwise when dead ; erroneously supposing their talents derived from demons, sorcerers, and bad spirits.

'You said, (p. 235) that cotton grew in our own country as well as Bengal. What are 'long staples' and 'short staples?' said Lucy.

Here is a picture of pretty cotton trees. There are three kinds of cotton in the United States, the nankeen cotton, so called, from its color,—the green-seed cotton,—and the black-seed cotton. The two first grow in the upper and middle country, and are called 'short-staple;' the last is cultivated in the lower country near the sea, or on islands near the shore, producing cotton of a fine, white, silky appearance, very strong, and of a 'long staple.'

But I will now resume my narrative:—

We sometimes rested under the shade of some towering talipot-tree, enjoying ourselves with the

rich native fruits, and watching the women getting in the rice harvest. After cutting the grain, they gathered it in bundles at the bottom of a shallow hole about a foot deep, and eight feet wide, then drove in half a dozen oxen to trample on it, thus getting 40 or 50 bushels a day.

THE NUTMEG-TREE.

The Nutmeg is a native of these Spice Islands, but most prolific in the group, called the islands of Banda, where it bears blossoms and fruit on the

same tree at all seasons of the year. The nutmeg is gathered at three different seasons, July, November, and April; and the mace in July, when the nut is most abundant; but in April, both the mace and the nutmeg are in the greatest perfection, the season being then the driest. The natives gather the fruit by pulling the branches towards them with long hooks; whilst some are employed in opening and taking off the first rind or shells, which is thrown away. The inner husk, the mace, is then carefully taken off with a knife, the pulp thus removed when fresh being of a crimson color, and covering the whole nut; this is squeezed very hard to extract all the moisture, and dried in the sun; the dark shell next the mace, and which coats the seed, thus becomes brittle, and the seed, or nutmegs, drop out. They are next soaked in sea-water, and impregnated with lime; a process which answers the double purpose of securing the nutmeg from insects and mould, and of destroying the vegetating property. It also neutralizes the volatile quality of the aroma of the spice. The mace is simply dried in the sun, and sprinkled with salt-water.

When I had wearied myself with my examinations I went to beg refreshment at a hut, belonging to one of the owners of the plantation. Here I could not help being struck with the many uses to which the valuable Cocoa-tree is here applied. The roof

of the house was composed of its leaves, which were fastened by the strong threads which attach the leaves to the tree. The landlady presented me a pleasant liquor, in a cup made of the shell of the cocoa, highly polished, curiously carved, and edged with silver ; and with Ceylonese fruit, in a neat basket made of the smallest leaves ; and we were showed her hanging-beds, mats, brooms and brushes, all of polished cocoa.

Next day we had to pass through a wood ;—but such a march ! I shall never forget it ! I had heard much of reptiles of hot countries, but never met with anything equal to the sufferings we endured in traversing this wood. We were first annoyed with a small species of leech not bigger than a pin, but which gives more pain than I can describe : to guard against it is an impossibility. I expected my boots and gloves were a sufficient defence ; but, to my astonishment and alarm, when I drew them off, I found them literally filled with blood. Our horses were almost mad with pain, and kicked and plunged so violently, we often had to dismount, which rendered our progress so slow that we had time enough for observation, and especially to be cautious not to approach too near the nests of the red ants built in the trees, the bite of this species being very severe.

We had also to avoid the singular dwellings of the white ants (see p. 113) shaped like a sugar-loaf, nearly as high as this room, and of so firm a sub-

stance they cannot easily be broken. They are rendered doubly formidable by affording shelter to snakes and scorpions, whose bite is fatal.

Sometimes we were obliged to stop among the tangles of brush-wood, woven with webs of the enormous Ceylon spider, almost as large as a mouse, and with legs three or four inches in length. Besides the curiosity of these webs, so different in texture to the delicate production of our small spider, they further gratified our curiosity by presenting several beautiful small birds, which they seem formed to catch—these little elegant creatures being often the prey of the Ceylonese spiders. In this wood, whilst I was examining some flowers, my attendant pointed out to me one of the kinds of enormous boa snakes, gorged with prey, basking in the sun in bushes at a little distance. He seemed about twenty-five feet long, and his appearance was grand and beautiful.

IN CONTINUATION.

Wearied with our fatiguing journey, I was delighted when we drew near a beautiful river, which I proposed crossing on horseback; but this my guide highly disapproved, assuring me the rivers of this island were much infested by alligators, and, not choosing to run any unnecessary risks, I submitted to his advice, and we travelled on its banks for some

time. At last we saw a crowd of people, and had reason to congratulate ourselves in not venturing into a Cingalese river. They were collected round an immense alligator, whose body they were opening; and, horrible to relate, within it was found the head and arms of a black man. Shocked as this sight, I was about to ride off, but, recollecting I might not have another opportunity of seeing an alligator, I returned. He was twenty feet in length; his skin was so hard and knotty, a musket-ball had made no impression on it. The crowd were trying to lift the alligator upon a sort of carriage, formed by fastening two carts together by cocoa-tree ropes; and, when loaded, it was with great difficulty drawn by eight bullocks to Columbo, the capital, there to be presented to Lord Stanley, the British governor of the island.

A very beautiful wild animal, called the Ceylon Deer, attracted our attention among the multitude of Cingalese curious creatures. It was the smallest species I ever saw, not much bigger than a fox, without antlers, its sleek sides spotted with bright red, and its taper legs not much bigger than a lady's finger. This pretty Ceylon animal is caught in traps, its flesh being in great esteem, for its tenderness, flavor, wholesomeness, and delicacy.

We rode on in silence,—a silence resulting from reflecting that the people of this country believe that Ceylon was the first residence of Adam, after his

expulsion from Paradise. This notion is merely founded on their own obscure traditions, which are mostly very ridiculous; yet the vast variety of animals I had seen, since my arrival on the island, forcibly recalled to memory the fine description, given by Milton of the beauty, stateliness, and familiarity of the animals of the garden of Eden :—

> Aronnd them frisking played
> All beasts of the earth, since wild, and of all chase
> In wood or wilderness, forest or den :
> Sporting the lion ramp'd, and in his paw
> Dandled the kid ; bears, tigers, ounces, pards,
> Gamboll'd before them ; the unweildy elephant,
> To make them mirth, used all his might, and wreath'd
> His light proboscis : close the serpent, sly,
> Insinuating, wove with Gordian twine
> His braided train, and of his fatal guile
> Gave proof unheeded.

The trees in this tropical country appeared to me strange and numerous ; I migh: have heard of some of them, yet they surpassed expectation. I saw a curious one, the fruit of which is called Eve's Apple, of a bright orange color, beautiful to behold with its smooth, glowing surface ; its inside is of a deep crimson, but very poisonous. Its fruit is strangely suspended by a natural rope, and hangs down like a mason's short plum-line ; but the most curious circumstance is that every one of these little Eve's Apples appears to have a piece bitten from its top.

I have seen preserved eve's apples sold at grocery stores in Boston, &c. as a sweetmeat or fruit.

We now approached the lofty mountains, over which extend the Candian dominions. On the highest mountain the king resides : it is very difficult of access, and the natural obstacles are increased by the dislike the natives have to foreigners. Europeans have brought upon themselves this hatred, by not acting with truth towards the original possessors.

At the foot of the mountains we stopt for the night.

As evening advanced, a sudden darkness covered the sky, and a most tremendous storm of thunder and lightning came on, attended with torrents of rain, and water rushing from the mountains. The thunder, re-echoed from the heights, was most awfully terrific ; but our alarm was forgot whilst beholding the agonizing distress of the natives ; all had recourse to incantations, talismans, and every absurdity that fear and superstition could suggest. These unhappy people imagine the dreadful storms, so frequent here, are produced by evil spirits, whose power and malignity they think are unbounded. With this dread on their minds they are in constant trepidation. We hope that the light of Christianity and knowledge will, at some future period, dispel the darkness of these fearful and degrading superstitions. And ought we not fervently to thank God for the benefits of superior knowledge which we have so long enjoyed ?

' I have been thinking,' said Frederic, when Mr. Selby paused, ' it would be a pleasant thing to travel and see so many curiosities ; but the accounts you relate, make me think it must often be frightful.'

Very true, my dear, it is so, replied his friend ; but it is the quality of true courage to overcome fear. There are many hardships and difficulties, to which the traveller is exposed, that demand more true courage of mind than perhaps ever was possessed by warriors. He, who leads his army to the fight,

knows all eyes are upon him, and, if he conquer, all will be repaid by what the world calls glory. But he, who silently traverses the earth, with the noble design of dispensing knowledge, extending discoveries, and adding to general information, cannot be too highly esteemed. Such men were Cook, Bruce, Ledyard, Mungo Parke, Belzoni, Franklin, Parry, and many others, but, above all, the benevolent Howard,

"Who, as an angel, all serene went forth
To still the raging tempest of the north."

'O, how I long to read about these good travellers!' cried Lucy. 'Will you get us books, mother?'

With the greatest pleasure, my dear, but you must first learn geography, and then we shall, with greater advantage, connect the works of these travellers, by tracing the countries they describe on the globe. And now, my dears, think of the inestimable privilege we enjoy in the art of printing, which places all knowledge and all these travels within our reach!

Well, my dears, continued Mr. Selby, was there anything in my account you did not understand?

'Please, sir,' said Frederic, 'you said (p. 235) people sometimes fight and kill sharks for sport?'

Yes, they know the habits of the fish. The shark's upper jaw is immoveable, the lower one only opens most horribly wide, like the lid of an iron chest, and he turns sideways or upside down, to seize his prey.

Whilst at the river Ganges, near Calcutta, one of these combats happened, which was related to me

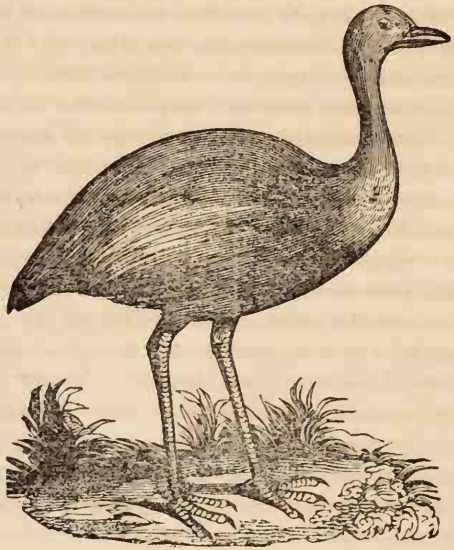
by an eye-witness : 'Several coolies or porters were unlading country boats, when a large shark came so near the shore, that they retreated a few paces. At this moment, an up-country native, standing upon the choppah roof of a boat, advanced, tying a running-knot in a rope. The shark rose to the surface 6 or 8 yards distant, when the native plunged into the water, close to the jaws of the monster, who darted towards him. The man dived beneath the fish, and both went down together. The man soon re-appeared on the opposite side of the fish, who also soon rose, and again darted towards his foe. While the fish passed over the lower part of the native's body to seize his prey, the man threw himself up perpendicularly, and went down feet foremost, instantly followed by the shark. They remained long out of sight, whilst I stood in breathless anxiety, not to say horror. Suddenly the man re-appeared, passed the end of the rope to the people on the shore, shouted victory, and the enormous monster was dragged to land. The native received no injury, except a hurt on the left arm, inflicted by the powerful tail or fins of the fish.'

'Mother,' said Lucy, 'Mr. Selby said animals were playful ; are any playful except kittens and puppies ?'

Yes, instances occur every day, and are sometimes noticed. Here is a London newspaper, printed only 14 days ago, which has since travelled 3000 miles. I will read a line or two from it :—' Small birds chase

each other in play, but perhaps the conduct of the crane and trumpeter bird is the most extraordinary. The latter stands on one leg, hops about in an eccentric manner, and throws somersets. The South Americans call him the mad bird. The crane expands its wings, runs round in circles, and, throwing little stones and pieces of wood in the air, catches them or pretends to avoid them, as if afraid. Water birds of all kinds dive after and chase each other. Deer often engage in a sham battle, twisting their horns together, and pushing for the mastery. All animals that pretend violence in their play, stop short of exercising it; dogs in playing take care to bite only in jest; and the ourang outang, in wrestling with his keeper, attempts to throw him and makes feints of biting him. Most animals carry out in play the semblance of catching prey; small cats, for a familiar instance, leap after every small moving object, even to leaves strewed by the autumn wind; they crouch and steal forward ready for a spring; the body quivering and the tail vibrating with emotion, they bound on the moving leaf, and again watch and spring at another. Young jaguars and cuguars have been seen playing with round substances like kittens. Young lambs collect together on little hillocks and eminences in their pastures, racing and sporting with each other in the most interesting manner. Birds of the pie kind are the monkeys of the feathered race, full of amusing mischief, play, and mimicry.'

The trumpeter bird, here mentioned, has green legs 7 inches high. He is coaxed to use his voice, which sounds like the tones of a trumpet, loud, and piercing. This bird, when tame, is almost too familiar, good-natured, and active. His feathers are black in general, those of the neck and breast are of a glossy gilded green, with reflecting blue and rainbow colors. To his master he is a companion, like a fond, fawning spaniel; always amusing, but somewhat envious of all four-footed favorites. He bites the heels of cats and dogs till they leave the room; if they resist, so



much the worse, as his agility evades all their attacks. He is sometimes trained to keep sheep, and, what with his wakeful eye, swiftness of foot, aided with his wings and sharp bill, no watchdog can rival him. —He even masters the wolf, by tearing out his eyes. He hops and dances round his master in the morning, presents his glossy green downy neck to be stroked, flaps his wings, and expects fondling like a pet dog.

OBSERVATIONS.

One rainy day, the children had colds, and staid in the house. Towards evening, they were listless, and wished for bed-time. Mrs. Johnson, to divert their weariness, said :—' Lucy, my dear, did you ever think what labor it required to furnish this room ?

' No, mother ; you bought all the things in the shops, did you not ? I do not think *that* much trouble, the shops are all pretty, and I like to go to them.'

And so do I, my dear ; it is very pretty to examine and admire every ingenious improvement ; but that is not all I mean. I wish you to consider these productions of nature, altered in so many various ways we can hardly trace their original. I suppose you know the carpet is made of the wool of the sheep ?

' To be sure, mother.'

But have you thought on the art of the dyer, all these beautiful figures, the discovery of the coloring materials, these Tyrian tints, and the art of mixing

them, so as to be clear and lasting ; and the ingenuity of weaving and interlacing this complicated web ?

' Where, do they get the dye, mother ?'

I cannot tell you all at present, my dear. I only wish now to show you how many things are daily within our notice. Of what are these chairs made ?

' Of mahogany.'

And where does mahogany grow ? At Honduras, in South America. Look at the width of that large table, and consider what a noble tree it must have been ! covered with beautiful flowers ! what labor to fell such hard wood ! and what skill, taste, and dexterity are displayed in cutting, forming, and polishing it ! Look at these marble pillars and mantlepiece ; dug from a ragged, ugly quarry, by hard labor. See these fire-irons ; who, that was ignorant, would suppose, beautifully bright as they are, they were taken from a dirty, stone-like substance, dug from pits ?

' Were they indeed, mother ? And was this pretty yellow wire of the fender also found in pits ?'

Yes, my dear, but not in its present state. It is called brass, and brass is formed by uniting two different metals together. All metals are found in the earth, usually very deep. The manner of working mines, purifying minerals by fire, and then mixing and applying them to all their various uses, will be a most delightful amusement to you hereafter. See what a pleasing effect is produced by these clean-painted white doors and wainscotting ! This pretty

white paint is made of the same dull-looking metal of which Cochituate water-pipes are made,—mixed with dirty manure,—thus turned into pure white powder for paint ; and this white powder may be changed, by extreme heat, into a most brilliant red.

'I wish we could see these things, mother.'

They are made daily at the lead works, in Boston. I intend also taking you to the glasshouse, S. Boston ; you will see a few dirty-looking substances changed by violent heat, into glass—a clear, pellucid, pure, transparent luxury, unknown in ancient times—one of the most useful inventions. Glass, with a slight metallic coating on one side, forms these beautiful mirrors, or looking-glasses—so called, because, when we look at them, we see a perfect image of ourselves. Yet this is one of its least valuable uses. Glass supplies many other elegancies, ornaments of every kind, imitations of precious stones, various contrivances for holding sights, flowers, and fruits, and beautiful drinking-vessels, goblets, and gasometer lamps, clear, clean, glistening, and elegant. Its most valuable uses are its magnifying powers, which assist the sight of the aged, as you see daily, in the use of spectacles—its convex or concave form giving, as it were, eyes to those who are partially blind. A near-sighted person, in ancient times, was forever purblind ; but opticians now give the blessing of renewed vision by a little lens, or piece of hollow glass, lodged on a man's nose. You have also seen a microscope,

which discovers to you the smallest parts of an insect or a flower—in fact, every thing too delicate for discrimination by the naked eye without this excellent assistance. Telescopes, in like manner, with larger and more powerful glasses, bring to view distant objects, which is of vast consequence at sea, and enables us nightly to admire worlds otherwise unseen.

This elegant clear substance, though originally invented from sand and sea-weed, at once keeps out the cold and storms of winter, and allows us to enjoy all the varieties of prospect in every season, not only in our houses, but in cars, omnibuses, and coach-

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Here the servant entered with a message that tea was ready. 'O dear,' exclaimed Lucy, 'I did not think it was so late.'

An hour ago, my dear, you wished for bed-time.

'Well, mother, then I was very tired.'

And why, my dear, are you not still tired,—shall I tell you? Because your mind has been employed. Either our minds or our bodies must be actively at work, or we cannot be happy. I am always sorry when I hear people exclaim they have nothing to do, or nothing new to read; the industrious will always find work; and the love of knowledge, employment for the mind. Remember, my dears, the sources of knowledge are inexhaustible.

END.